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REPORT R-1646

DEVELOPMENT OF CASE, CARTRIDGE, ALUMINUM, FAT49E4

BY

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July 1962

REPORT R-1646



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**TECHNICAL
REPORT**
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OBJECT

To design, develop and fabricate a satisfactory 7.62mm aluminum cartridge case by the blank, cup and draw process; to assemble sufficient cartridges, 7.62mm, Ball, M59 type with aluminum cartridge cases for firing tests for case evaluation.

SUMMARY

The 7.62mm aluminum cartridge case was designed, developed and evaluated. Initial development utilized regular brass cartridge case tooling with minor changes. Modifications to the initial cartridge case design eliminated problems encountered during fabrication. Various firing casualties such as primer leaks, blown primers and gas eroded heads were encountered during testing in rifles and machine guns. Changes in heat treatment, the type of propellant and primer used and a closer control of the head area dimensions of the case resulted in the fabrication of a 7.62mm aluminum cartridge case acceptable at this stage of its development since it is almost completely free of defects. The case thus developed is identified as Case, Cartridge, 7.62mm, FAT49E4.

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INTRODUCTION

As part of the overall aluminum cartridge case project at Frankford Arsenal, development was initiated of 7.62mm aluminum cartridge cases by the blank, cup and draw process. With the experience gained in the fabrication of the other sizes of aluminum cartridge cases by the blank, cup and draw process, it was believed that the development of the 7.62mm aluminum cartridge case could be accomplished with a minimum of difficulty. In September 1955, \$15,000. was allotted from RAD Order 5040-5412-07-40101 (TS1-2) for the design, development and fabrication of approximately 10,000 7.62mm aluminum cartridge cases under DED Program No. 7-56, appendix A.

The regular tooling for the 7.62mm brass cartridge case was modified to accommodate the peculiar characteristics of the aluminum alloy used to fabricate these cartridge cases. A four-draw process for the fabrication of the 7.62mm FAT49E4 aluminum cartridge case was developed using the caliber .30 brass cartridge case machine equipment.

DISCUSSION

1. In September 1955, initial design work toward development of an acceptable 7.62mm aluminum case by the blank, cup and draw process was initiated under R&D Program No. 7-56. A quantity of 7075 aluminum alloy strip 0.180" x 3.0" x 48.0" was available at this Arsenal. This strip was annealed at 750°F for two hours and rolled to a required thickness of 0.160" \pm 0.001". The material was again annealed at 750°F for two and one-half hours, slow cooled and blanked and cupped in a double action press. The tooling for this operation was the same as that used for the 7.62mm brass cup with the exception that the radius of the cupping die was increased from 0.560" to 0.600". The cups were examined under 2X magnification for fine cracks or splits, particularly at the inside bottom of the cup and for cracks at the inside

radius. Remaining tooling required was that normally used for the fabrication of the 7.62mm brass cartridge case four-draw process, with slight modifications. The machine equipment utilized was that normally used for fabrication of 7.62mm brass cartridge cases.

2. Approximately 550 cartridge cases were fabricated in this fashion, which were essentially the same in design as the 7.62mm brass cartridge cases except as shown in table 1.

Table I

<u>Dimensions</u>	<u>Brass Case</u>	<u>Aluminum Case</u>
Min. Wall Thickness (From Inside Base)	(Dwg C7553738)	
.120"	.032"	.040"
.370"	.023"	.029"
.620"	.020"	.021"
1.310"	.010"	.012"
Head to Datum Length	1.634" - .006"	1.635" - .003"
Body-Shoulder Junction Radius	.08" R.	.135" R.
Primer Pocket Depth	.126 + .005	.135 + .005"

3. Fifty of these cases were assembled into cartridges using 45.4 grains of WC846.4 propellant and primed with Remington #39 primers. These cartridges were identified as Lot #1 and were used to establish and verify the charge. Results of these tests are included in appendix B, summary of which follows:

Charge Establishment

<u>Velocity - f/s</u>		<u>Pressure - psi</u>	
Mean Vel	2715	Mean Press.	48,600
Vel. Correction	+21	Press. Correction	-1600
Corr. Velocity	2736	Corr. Pressure	47,000
Ex. Var.	33	Ex. Var.	2200
S.D.	11		

The remaining 500 cases were primed with Remington #39 primers and assembled into Cartridge, Ball, M59 type using 45.5 grains of WC846.4 propellant. The cartridges were identified as Lot 762-2. These cartridges were fired at ambient temperature and also after conditioning for two hours at -40°F for function and casualty in the T161 machine gun and the T44 and T48 rifles. Complete firing data is included in appendix B. There was one casualty, a burned through side wall in the cold firing in the T161 machine gun. This casualty resulted in a gun stoppage.

4. A second lot of approximately 500 cartridge cases was fabricated to further evaluate the case design. The tooling was the same as that used in the fabrication of the first lot with the exception of the draw punches. The initial draw punches had too small a radius on the working end and when this radius was increased, the cracks at the inside of the base, which had been prevalent in the previous lot, were eliminated. These cases were primed with Remington #39 primers and assembled into cartridges using 45.4 grains of WC846.4 propellant. This lot of cartridges was identified as 762-3.

5. The cartridges of Lot 762-3, after conditioning at ambient and -40°F temperatures, were fired for function and casualty in the T161 and T65 machine guns and the T44 and T48 rifles. There was one partial rupture and one burn through in the cold firing in the T65 machine gun. Complete firing data is included in appendix B.

6. In Lots 762-1, 2, and 3, the regular 7.62mm brass cartridge case tooling had been modified for the fabrication of the 7.62mm aluminum cartridge case components. Now new tooling incorporating all prior modifications was made and used to fabricate 3500 of the cases of most recent design for more extensive tests. These cases had the same basic case design as Lot 762-3. A copy of the drawing of Case, Cartridge, FAT49 type is included as figure C-1. The 3500 aluminum cartridge cases were primed with Remington #39 primers and assembled into cartridges using 45.5 grains of WC846.4 propellant. These cartridges were identified as Lot 762-4.

7. The 3500 cartridges of Lot 762-4 were fired at ambient temperature and also after conditioning for two hours at -40°F and +165°F, for function and casualty in the T65 and T161 machine guns and the T44 and T48 rifles. Twenty cartridges each were fired both wet and dry for velocity. Twenty drilled cartridges were also fired for pressure with velocity measured simultaneously. Complete firing data is included in appendix B, a summary of which follows:

<u>T65 Machine Gun</u>			<u>T161 Machine Gun</u>		
<u>Primer Leaks</u>			<u>Rim Shears</u>		
<u>H</u>	<u>C</u>	<u>A</u>	<u>H</u>	<u>C</u>	<u>A</u>
204		8	1		

<u>Gas Eroded Heads</u>			<u>Ruptures</u>		
<u>H</u>	<u>C</u>	<u>A</u>	<u>H</u>	<u>C</u>	<u>A</u>
1*					1

*Gun stoppage NOTE: Also, 9 severely stretched cases on the verge of rupture in the cold test in the T161 machine gun.

8. It was observed from the results of the tests of Lot 762-4 that a sharp angle existed on the inside of the case wall where the two tapers on the fourth draw punch met. Inadvertently, the blend radius was omitted when this punch was fabricated. This is believed the cause of the nine severely stretched cases which were very close to ruptures, encountered in the cold firing in the T161 machine gun. Two approaches were decided upon:

- a. Reworking the existing fourth draw punch to include a blend radius (see fig. C-2);

- b. Fabricate a new fourth draw punch which incorporated a single taper, increasing case wall thickness at the midsection (see fig. C-3).

9. At this time, two new lots of aluminum strip had been obtained. One lot of strip had 7075 chemistry, but was of high purity grade, having been subjected to a sonic test which assured material with no flaws, dross, etc. greater than 1/64" size. The other lot of strip was of the same purity just described, but had modified chemistry. The allowable percentage spread of certain constituents was reduced, as listed below, the material still meeting the chemistry requirements of 7075 alloy:

<u>Constituent</u>	<u>Composition Limits Spec. QQ-A-283</u>	<u>Composition Limits for Special Material for this Program</u>
Iron	0.7 Max.	0.20 Max.
Silicon	0.5 Max.	0.10 Max.
Chromium	0.18 - 0.40	0.17 - 0.20
Manganese	0.3 Max.	0.05 Max.

10. Accordingly, four lots of cases were fabricated utilizing both fourth draw punch designs mentioned and both types of aluminum strip. Identity of these lots is as follows:

<u>Case & Ctg Lot No.</u>	<u>Quantity Made</u>	<u>Ctg Case Dwg.</u>	<u>Material</u>
762-5	3400	FB38671	High Purity, Special Chem.
762-6	3500	FB30594	High Purity, Special Chem.
762-7	5200	FB8671	High Purity, Commercial
762-8	2600	FB30594	High Purity, Commercial

Cartridges were assembled with these cases using Remington #39 primers, 45.8 grains of WC846 propellant and M59 ball bullets. Extensive function and casualty testing was performed on the cartridges from each lot after conditioning for two hours at hot, cold and ambient temperatures in the T44 and T48 rifles and the T161 and T65 machine guns. In addition, pressure and velocity tests were conducted on cartridges from each lot. Detailed data of these tests is included in appendix B, a summary of which follows:

Lot 762-5

	<u>Primer Leaks</u>	<u>Eroded Heads</u>	<u>Blown Primers</u>	<u>Splits</u>
H	560	18	.	
C	25	1		1
A	20	0		

Lot 762-6

	<u>Primer Leaks</u>	<u>Eroded Heads</u>	<u>Splits</u>	<u>Ruptures</u>
H	199	10	24	16
C	0	0	1	
A	6	2	25	25

Lot 762-7

	<u>Primer Leaks</u>	<u>Blown Primers</u>	<u>Eroded Heads</u>	<u>Ruptures</u>
H	547	8	17	93
C	48	0	0	1
A	35	0	0	46

Lot 762-8

	<u>Primer Leaks</u>	<u>Burn Throughs</u>	<u>Eroded Heads</u>	<u>Ruptures</u>	<u>Splits</u>
H	533	1	27	3	0
C	42	0	0	1	1
A	39	0	0	2	0

11. From the tests results of the four previous lots of cartridges, it was believed that a heavier web thickness might eliminate the head area defects encountered. Accordingly, fifty cases were fabricated using the special chemistry strip but with a web thickness increased from .059" to .090". All of these cases were primed with Remington #39 primers; half the cases were assembled into ball cartridges using 45.8 grains of WC846 propellant and the remainder were assembled into ball cartridges using 39.5 grains of IMR 4475 propellant. These cartridges were identified as Lots 11-A-1 and 11-A-2 respectively.

12. The cartridges of Lots 11-A-1 and 11-A-2 were conditioned for two hours at +165°F and then fired for function and casualty in the T44 rifle. In the firing results of Lot 11-A-1 there were 3 primer leaks and 11 blown primers with gas eroded heads. The firing of Lot 11-A-2 resulted in 6 primer leaks, 2 complete rim shears and 4 blown primers with gas eroded heads. Complete firing data is included in appendix B.

13. At this time, it was decided to determine the effect of various parameters upon primer area firing casualties. These parameters included use of primer vent seals, various propellants, smaller primer pocket diameter and one-piece vs. three-piece heading punches. (Formerly all cases fabricated under this project had been made using three-piece heading punches; use of a one-piece heading punch would permit incorporation of a slight "lead-in" radius at the entrance to the primer pocket).

14. All of the cases were fabricated from 7075-T6 special chemistry strip, and were assembled into M59 type cartridges using Remington #39 primers and propellant charge as listed in the following

table. All cartridges listed were conditioned at +165°F for two hours, prior to testing in T44 rifles and T52 machine guns, since this had been determined to be the condition at which incidence of primer area casualties was maximum. Complete firing data is included in appendix B; a summary of the results follows:

Lot No.	Heading Punch	Propellant		Primer Vent Seal	Primer Pocket Dia. (in)	Cigs Fired	Primer Leaks	Gas Eroded Holes	Blown Primers	Rim Shears
		Type	Qty. Grs.							
12A-1	3-Piece	WC846	45.8	No	.2093 ± .0005	110	52	14	0	2
12A-2	3-Piece	HES5232.99	39.5	No	.2093 ± .0005	90	27	9	0	0
12B-1	1-Piece	WC846	45.8	No	.2093 ± .0005	95	54	5	0	2
12B-2	1-Piece	HES5232.99	39.5	No	.2093 ± .0005	107	19	0	0	0
12B-3	1-Piece	WC846	45.8	Yes	.2093 ± .0005	100	91	10	8	0
12C-1	3-Piece	WC846	45.8	No	.2078 ± .0005	80	50	2	0	5
12C-2	3-Piece	HES5232.99	39.5	No	.2078 ± .0005	100	18	4	0	0

15. Results of these tests indicated the following:

- a. HES 5232.99 propellant, in combination with #39 primers yielded somewhat better performance insofar as primer area casualties, than did WC846 propellant in combination with the same primer.
- b. There was no significant difference in primer area casualties in the use of either the one or three-piece heading punch.
- c. No significant difference in performance insofar as primer area casualties was obtained between standard diameter and reduced diameter primer pockets.
- d. Use of cellophane primer vent seals resulted in increased primer area casualties.

16. In order to more carefully investigate the effect, if any, of various primer pocket diameters, approximately 400 cases were fabricated from premium quality, special chemistry strip, in which the primer pockets were machined to exact sizes as listed in the following table. These cases were primed with Remington #39 primers and assembled into cartridges using 45.8 grains of WC846 propellant. The pockets had very smooth walls with no scratches or bulges that might provide an avenue of escape for gases. The cartridge lots were identified as follows:

<u>Lot No.</u>	<u>Pocket Diameter</u>	<u>No. of Rounds</u>
13-A-1	.2080" \pm .0001	95
13-A-2	.2085" \pm .0001	99
13-A-3	.2090" \pm .0001	104
13-A-4	.2095" \pm .0001	102

After verification of charge and conditioning at +165°F for two hours, Lots 13-A-1, 2 and 3 were fired for function and casualty in the T44 rifle. After similar conditioning Lot 13-A-4 was fired for function and casualty in the T65 machine gun. Although extreme care was

taken in the machining of the primer pockets, the firing tests resulted in a large percentage of primer leaks. Detailed firing results are contained in appendix B., a summary of which follows:

	<u>Primer Leaks</u>	<u>Eroded Heads</u>
Lot 13-A-1	49	6
Lot 13-A-2	60	4
Lot 13-A-3	23	1
Lot 13-A-4	67	3

17. A study was then initiated to determine whether maximum strength was being developed by the solution heat treatment and artificial aging being given the cartridge cases.

18. Approximately 715 cartridge cases were fabricated from 7075 premium quality, special chemistry strip. These cases were divided into lots which underwent different solution temperatures and time at the temperatures, as listed below and as shown in photomicrographs, figures D-1 through D-9. To help guard against development of structure, the air agitator was turned off in the water quench and the water was rapidly circulated by increasing the water velocity through the water inlet valve. Also the cases were artificially aged immediately after the solution quench treatment.

NOTE: Even though firing results showed little improvement, it was thought these procedural changes beneficial and they were used in the fabrication of cases for the balance of tests under this project.

The cases were primed with Remington #39 primers and assembled into cartridges with 45.8 grains of WC846 propellant. The lots of cartridges, assembled with cases of different lots according to varying solution heat treatment were identified as follows:

<u>Lot No.</u>	<u>Solution Heat Treatment</u>	<u>No. of Rounds</u>
13-B-1	860°F/30 Min	105
13-B-2	870°F/25 Min	76
13-B-3	870°F/30 Min	87
13-B-4	870°F/35 Min	88
13-B-5	870°F/40 Min	* 104
13-B-6	880°F/30 Min	66
13-B-7	890°F/25 Min	102
13-B-8	890°F/30 Min	88

19. After conditioning for two hours at +165°F, the eight lots of cartridges were fired for function and casualty in the T44 rifle and T52 machine gun. Complete firing results are included in appendix B, a summary of those results follows:

	<u>Primer Leaks</u>	<u>Gas Eroded Heads</u>
13-B-1	20	29
13-B-2	22	16
13-B-3	22	15
13-B-4	13	10
13-B-5	30	50
13-B-6	29	• 12
13-B-7	15	9
13-B-8	13	8

The cartridges developed many firing casualties and there was no apparent difference in any of the heat treatments in relation to the firing results.

20. The next approach in elimination of the priming area firing casualties was to determine if type of primer had any significant effect on these casualties. It was decided to fabricate two lots of cases and arm them with #72 and #39 primers. Upon examining the #39 primers which were intended for use, it was observed that the edges of the cup were rough and it was thought that such edges might be possible avenues of escape for the primer and/or propellant gases. Accordingly, some #39 primers were reworked to remove the rough edge. The primed cases were assembled into cartridges using 45.8 grains of WC846 propellant and the lots were identified as included in table II. Three lots of cartridges were conditioned at +165°F for two hours prior to firing for function and casualty in the T44 rifle. Cartridges from lot 13-C-2 were also fired for function and casualty in the T65 machine gun. Results of the firing are shown in the following table:

Table II.

<u>Lot No.</u>	<u>Primer</u>	<u>No. of Rounds</u>	<u>Primer Leaks</u>	<u>Gas Eroded Heads</u>	<u>Blown Primers</u>
13C1	#72	72	8	0	0
13C2	#39	59	11	17	3
13C3	#39 w/rough edges re- moved	56	16	28	0

21. In the development of the various calibers of aluminum cartridge cases at this arsenal, several alloys and conditions of strip have been used. It has been determined, through fabrication experience at Frankford Arsenal, that the use of 7075 alloy produced the best results. In former cartridge case fabrication T-6 condition strip had been used. It was believed, at this time, that

7075 alloy "O" condition strip might eliminate some difficulties encountered in fabrication. The 7075-0 strip is received in a long cycle annealed condition to preserve the soft, workable properties whereas the 7075-T6 material is received in the age hardened condition. It was believed, with the use of the 7075-0 material, that fabrication could start on the "as received" strip without annealing prior to use and that the workable properties of the material would insure results superior to those possible in the use of the 7075-T6 strip even after annealing. Contrary to this the cups processed from 7075-0 material were unsatisfactory and only slightly improved cups would be processed after the "as received" 7075-0 strip was annealed. Photomicrographs (figs. D-10 and D-11) were taken of the 7075-0 material "as received" and the 7075-T6 material after annealing. The constituents in the 7075-0 material "as received" were large and not oriented directionally. Also the photomicrographs suggest a greater solution of alloying elements. These facts account for the poor cupping quality even though the hardness readings indicated a fully annealed condition. The final solution to eliminate the cracks in the cupping operation to attain a satisfactory structure was by giving the 7075-0 material a solution quench treatment at 890°F for 30 minutes followed by a water quench and these followed by an anneal; after this treatment the material cupped perfectly. A photomicrograph of resultant conditions is shown in figure D-12.

22. It was decided to determine what effect, if any, vent hole diameter had upon primer area firing casualties. A small control lot of cases was fabricated from 7075-0 material with the regular vent hole diameter of $.078 + .004$. Fifty-five cases were fabricated from the same strip but had an enlarged vent hole diameter of $.1093 + .004$. All were assembled into cartridges with #39 primers and 45.8 grains of WC846 propellant. Cartridges assembled with cases having regular vent holes were identified as Lot 14A1; those having an enlarged vent hole were identified as Lot 14A2. After conditioning for two hours at +165°F, the cartridges of both lots were fired for function and casualty in T44 rifle. The firing of Lot 14A1 resulted in 3 small primer leaks while 14A2, with the enlarged vent hole, developed 4 small and 6 large primer leaks when fired.

23. Inasmuch as the firing results still showed primer area casualties, it was decided to discontinue efforts to modify the case dimensionally or structurally in an attempt to overcome primer area casualties, but rather to go, as a last resort, to the use of the

steel adapter cup-type primer which had proved fruitful in eliminating primer area casualties in other sizes of small arms aluminum cartridge cases. A small quantity of Remington #72 primers with copper plated steel adapter cups were available at this arsenal from a prior aluminum case contract. Accordingly, approximately 180 cartridge cases were fabricated from 7075-T6 condition special chemistry premium quality strip. Since the Remington #72 primer with steel adapter cup requires a large diameter primer pocket, the pockets of these cases were increased to $.2295" + .0005"$. A drawing of Case, Cartridge, FAT49E4 with this enlarged primer pocket is shown in figure C-4. These cases were made with a three-piece heading punch.

24. Eighty-seven of these cases were vented with a regular vent hole punch $.078 + .004"$ diameter and 92 with an enlarged vent hole punch $.1093" + .004"$. All cases were primed with Remington #72 adapter cup-type primers and assembled into cartridges using 40.0 grains of HES 5232.99 propellant. Cartridges assembled with cases having regular vent holes were identified as Lot 15A and those assembled with cases with enlarged vent holes were identified as Lot 15B. Cartridges of both lots were fired for function and casualty in the T65 machine gun with the ammunition at both ambient and $+165^{\circ}\text{F}$. Velocity and pressure firings were performed as controls. Complete firing data is included as appendix B. There were no case casualties of any sort in any of these tests.

25. Approximately 800 cases were fabricated from 7075-0 strip using a three-piece heading punch. These cases were primed with Remington #72 primers, assembled with steel adapter cups. They were assembled into cartridges using 40.0 grains of HES 5232.00 propellant. The cartridges were identified as Lot 16-0. A small lot of approximately 45 case rejects were assembled into cartridges to be fired for informational purposes. This lot of cartridges was identified as Lot 16-0 rejects. Two hundred and forty cartridges of Lot 16-0, after conditioning for two hours at $+165^{\circ}\text{F}$ and 70°F were fired immediately for function and casualty in the T65 machine gun. The balance of the cartridges of Lots 16-0 and 16-0 rejects were fired for function and casualty at ambient temperature in the T44 rifle and the T65 machine gun. Complete firing data is included in appendix B. There were 3 rim shears and 2 case (SJ) splits but no primer leaks. Approximately 900 cases were fabricated from 7075, Condition T-6 commercial chemistry strip. A three-piece heading punch was used. These cases were primed with Remington #72 primers with steel adapter cups.

a. Approximately 160 cases had rough mouths due to dull tooling in the final trim. These cases were assembled into cartridges using 40.0 grains of HES 5232.99 propellant. This cartridge lot was identified as 16-TR.

b. Seven hundred and twenty cases were assembled into cartridges using 40.0 grains of HES 5232.99 propellant. These cartridges were identified as Lot 16-T.

c. Four hundred and eighteen cases were rejected from the 16 case lots because of large head diameters. These cases were fabricated both from 7075-0 and 7075-T6 strip. After reaming the primer pockets where necessary, the cases were primed with Remington #72 primers with steel adapter cups, and assembled into cartridges using 40.0 grains of HES 5232.99 propellant and identified as Lot 16-TO.

26. The cartridges of Lots 16-TR, 16-T and 16-TO were fired for function and casualty, hot, cold and ambient in the T44 rifle and T65 machine gun. Complete firing data is included in appendix B, a summary of which follows:

Casualties

<u>Lot No.</u>	<u>Gun</u>	<u>Rim Shears</u>			<u>Splits</u>			<u>Ruptures</u>			<u>Burn Throughs</u>		
		<u>H</u>	<u>C</u>	<u>A</u>	<u>H</u>	<u>C</u>	<u>A</u>	<u>H</u>	<u>C</u>	<u>A</u>	<u>H</u>	<u>C</u>	<u>A</u>
16-TR	T44	0	0	0	5	0	2	0	0	0	5	0	0
16-T	T65	8	0	0	4	1	1	1	1	0	4	0	0
16-TO	T65	No Casualties											

Cartridge lots 16 and its sub-lots totaled approximately 2000 cartridges. The firing of these cartridges resulted in 30 casualties as summarized above. These casualties are serious because they caused 13 gun stoppages. However, the cases were carefully checked and soft spots were found which would cause weakened areas in the case wall. Further investigation disclosed that the

heat treating equipment was not functioning properly thus causing the soft spots. Since there were no such casualties in lots 11 through 15 it was assumed that equipment failure caused improper heat treatment with resultant casualties. There were no primer leaks. Upon completing the fabrication of all lots of aluminum cartridge cases, prior to priming, the cases were anodized using the alumilite process. A copy of this anodizing procedure is included in appendix E. The cases were then mouth annealed, the mouths of the cases being immersed 1/4" for 8 seconds in a saline solution maintained at 700°F and then quenched in tap water. The cases were then "dag" coated as a preservative and as an aid to chamber extraction.

CONCLUSIONS

It is concluded that the 7.62mm, FAT49E4 aluminum cartridge case has been successfully developed. The causes of various case casualties, developed in the firing of the 7.62mm cartridges assembled with these cases, have been eliminated. The greatest problem, that of the primer area defects has been solved by the use of the copper plated steel adapter cup-type primer.

Tooling for fabricating the caliber 7.62mm, FAT43E4 cartridge cases by the blank, cup and draw process has been developed. This tooling is listed on Plan of Work, see figures C-5, C-6-1, C-6-2, C-6-3 and C-7.

A blank, cup and draw process for the fabrication of the 7.62mm, FAT49E4 aluminum cartridge case was developed. This process is based upon the use of equipment available in the fabrication of the 7.62mm brass cartridge case. In the event of large scale fabrication, changes in the feeding mechanism would be necessary due to the lightness in weight of the aluminum components.

Distortion and warpage of aluminum case components can be greatly minimized by solution heat treating the components prior to the tapering operation. Because of the rapid aging characteristics of 7075 aluminum alloy, it is necessary that the tapering operation be performed within four hours after the solution heat treatment.

A minimum head and sidewall hardness of Rockwell 30T 70 is necessary for satisfactory functioning of cartridges assembled with aluminum cases.

Primer area casualties, caused by primer leaks and blown primers, have been practically eliminated through the use of the copper plated steel adapter cup primer. The key to the elimination of the head area casualties without the use of the adapter cup primer should be in the development of the proper case head hardness and continuity of the anodize coating on the surfaces of the case base interior and the primer pocket.

RECOMMENDATIONS

Additional lots of 7.62mm aluminum cartridge cases should be fabricated and assembled into cartridges for more extensive firing tests. The following recommendations should be considered in the fabrication of these cases:

The use of 7075, Condition T-6, premium quality, commercial chemistry, aluminum strip.

An increase in web thickness to strengthen head area.

The use of a fourth draw punch having a .001"/inch single taper.

The adoption of the three-piece heading punch in conjunction with the use of the Remington #72 primer with steel adapter cup and the adoption of the one-piece heading punch when the case is primed with the regular primer. The one-piece heading punch gives a slight radius at the mouth of the primer pocket as a lead-in for the regular primer.

The development of a more uniform, closely controlled heat treatment and a quicker solution quench after heat treatment should be devised. Also a rapidly circulating quench would be preferable to the air agitated quench. The elimination of delay between solution quench treatment and artificial aging should also be accomplished.

The continued use of the Remington #72 primer with copper plated steel adapter cup at the present time.

A continued effort to develop a primer pocket which would permit the use of the regular primer without resultant primer leaks. This could possibly be accomplished through pocket and heading in two operations rather than single shot heading. The elimination of any taper in the primer pocket might provide the answer.

C O P Y

APPENDIX A

C O P Y

No. 7-56

13 September 1955

DEVELOPMENT ENGINEERING DIVISION

RESEARCH AND DEVELOPMENT PROGRAM

Project:	TS1-2	FA 3-2-6-9
Priority:	1C-368	
Charge:	RAD 5040-5412-07-40101	Ex. O. 51702-02-518 Est. Cost: \$15,000.00
Project Director:	Mr. E. W. Read	
Project Engineer:	Mr. S. Miller	
Coordinator:	Mr. H. Burgess	
Subject:	Case, Cartridge, Cal 7.62mm Type, Aluminum	
Object:	<p>a. In connection with engineering design studies and evaluations for developmental ammunition and related material, to develop a satisfactory cal 7.62mm aluminum cartridge case by the blank, cup and draw process.</p> <p>b. To make firing samples for preliminary design studies of cal 7.62mm aluminum cartridge cases made by the blank, cup and draw process.</p>	

Introduction:

1. As part of the overall aluminum cartridge case project at this arsenal, it is desired to develop a satisfactory blank, cup and draw process for the fabrication of cal 7.62mm type aluminum cartridge cases. A maximum of 10,000 cartridge cases is to be made under this program.

2. The work to be performed under this program has been discussed with the following personnel:

Messrs. A. Lippincott
E. Olszanowski
R. Donnard

F. Costello
L. Furmanski
J. Werst

Instructions:

3. SD-D: a. Prepare a drawing of the cal 7.62mm type aluminum case from data supplied by SD-M. Assign an FAT number to this drawing.

b. Prepare a drawing of cartridge, ball, caliber .30, T104E1 type, utilizing the case from par. 3.a. Assign an FAT number to this drawing.

c. Prepare drawings of necessary work and inspection gages for use in processing cal 7.62mm type aluminum cases as requested by SD-M.

d. Prepare tool drawings as requested by SD-M.

4. SM: Make necessary work and inspection gages as requested by SD-M, in accordance with drawings made by SD-D.

5. SP-3 (Mr. Dorsam): Have necessary tools made, as requested by SD-M, in accordance with drawings prepared by SD-D.

6. SZ: a. Using available strip stored in SZ, fabricate lots of cal 7.62mm type aluminum cartridge cases, according to Drawing No. C7553738, or, as directed by SD-M.

b. Upon receipt of mouth annealed cases from SS "Dag" coat case bodies and heads, allow to dry, and then deliver the coated cases, properly identified, to SL for priming and loading.

7. SW-2: Anodize the cases delivered by SZ in the manner prescribed by the equipment operating instructions. Deliver the cases, properly identified, to SK for inspection.

8. SK: a. Make measurement surveys of components as requested by SD-M.

b. I&G the cases delivered by SW-2. Deliver cases, properly identified, to SS.

c. I&G cartridges delivered by SL. Deliver cartridges, properly identified, to SF.

9. SS: Mount anneal the cases delivered by SK in the usual manner, or as directed by SD-M. Forward mouth annealed cases, properly identified, to SZ.

10. SL: a. Forward necessary components, properly identified, to SF for establishment of propellant charge.

b. Prepare machine loaded verification sample as directed by SD and deliver, properly identified, to SF.

c. Prime cases delivered by SZ with current production primers as directed by SD-M.

d. Load and assemble car ridges as directed by SD, using propellant of the current production lot. Deliver cartridges, properly identified, to SF.

11. SD (Mr. Beugless): Establish and verify charge for Cartridge, Ball, Cal 7.62mm, T104E1 type with aluminum case.

12. SX: Deliver propellant and primers, of current production lots, to SL, as requested.

13. SF: CAUTION: THE CARTRIDGES TO BE FIRED UNDER THIS PROGRAM ARE EXPERIMENTAL, HENCE TAKE ALL POSSIBLE PRECAUTIONS FOR THE SAFETY OF GUNNERS AND OBSERVERS.

a. Establish propellant charge for Cartridge, Ball, Cal 7.62mm, T104E1 type with aluminum case. Report results to SD.

b. Fire verification of propellant charge tests and report results to SD.

c. Fire other single shot, rifle and machine gun function tests as directed by SD-M.

14. SD-M: Make tests and perform such design, development and engineering duties as may be required for the performance of this program.

/s/ N. H. Gear
for J. PETERS

HRB/nfr

Account #1 B.DC.
B. De CASTRO

Copies to:

SP-1, Mr. Peters

SP-2, Mr. Penn

SD-D, SM, SP-3, SZ,

SW-2, SK(3), SS, SL,

SX, SD-M, SD, SD-A(2),

ORDIM, ORDTS, OAC

Messrs. Beugless,

Lippincott, Olszanowski,

Donnard, FCostello,

Furmanski, Werst, Fay,

Sprofera, SMiller, Burgess,

SP File (2), Cost Sect (3)

Selby

Sprofera

DiRenzo

/s/ Samuel W. Parnelle, Jr.
SAMUEL W. PARNELLE, JR.
Lt Col, Ord Corps
Chief, Small Arms Ammunition Dept

750/12 mos/30 Sept 56

POWDER <u>W 846.4</u>	FRANKFORD ARSENAL PROOF TESTING SECTION	AMM. LOT. / <u> </u>
ARMY LOT <u> </u>		VELOCITY & PRESSURE REPORT
CHARGE <u>45.4 grs</u>		CALIBER <u>.30</u>
CASE <u>Aluminum</u>		BULLET <u>Ball</u>
PRIMER <u>Rem #39</u>		OBJECT: <u>Establish Charge</u>
	<u>R&D P #7-56</u>	
		REF. NOS. <u>8-55</u>

SPEC:		CTG. 783E2 L.R.	
REQ. NO.	BUL. NO.	TRFD.	A.L. 40633 CHG. 45.6
REQ. NO. FA Universal #10	BUL. NO. R-51	TRFD. 70	C-357, R-426
REQ. NO. FA Universal #10	BUL. NO. G-67	TRFD. 185	V.V. 2748 f/s
REQ. NO.	BUL. NO.	TRFD.	P. V. 45,400 psi

	Ref	45.4	Ref	45.4
1.	2731	2706	2725	47500
2.	2726	2701-	2729	46300
3.	2731	27344	2726	48900
4.	2725	2717	2722	45800-
5.	27434	2716	-2716	46300
6.	2722			
7.	2719		13618	234800
8.	2723		2724	48000
9.	2732			
10.	2714-			
11.				
12.	27266	Total	13	3100
13.	2727	Mean		
14.		V Cor		
15.		Cor V		
16.				
17.	29	Ex.Var		
18.				
19.		S.D.		
20.				

REMARKS:

Rounds alternated

Lumiline #1

Counter #2

		CHRONOGRAPH OR	Bauldree	W.O.	51702-02-518
CASES & PRIMERS	OK	GUNNER	Fickenscher	Proj.	3-2-6-9
DATE FIRED	11-17-55	FOREMAN		CHIEF BALLISTICIAN	
ORDBA FORM SP 931 REV MAR 51				ARMY-ARLITAN ARSENAL (INMPC), METUCHEN, NJ-08-224	

Powder: W 846.4
 Charge: 45.4 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
 D.E.D.R. & D.P. No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LOT 7.62-2
 CALIBER .30 L.R.
 BULLET Aluminum
 CARTRIDGE
 MFG. F.A.

GUN DATA							
T-161 MG.		Lot #2		Lot #2		Lot #2	
TYPE OF GUN	HANGFIRE	T-161		T-161		T-161	
NO. OF GUN		3		3		3	
ROUNDS IN GUN		4735		4766		4858	
NO. OF BARREL		1		1		1	
ROUNDS IN BARREL		4735		4766		4858	
HEAD SPACE		-		-		-	
PIN PROTRUSION		-		-		-	
ROUNDS FIRED		15		31		22	
RDS. IN BURST OR GLIPS		15		31		22	
NO. OF BURSTS OR GLIPS		1		1		1	
GUNNER		Williams		Williams		Williams	

GUN FUNCTION															
GROUP (MS)															
ZERO (MS)															

DEFECTS							
PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE							
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK		OK		*	
REMARKS:	Normal Firing			Normal Firing			Cold Firing

*1 stoppage: Due to
 burned thru case
 Lot #7.62 - 2 Broke Extractor
 Test discontinued.

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AG
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T1E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3 M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3 M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	SM CAL. 50, B. M2 AG	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER <u>Seixas</u>		W.O. 51702-02-518 DATE FIRED <u>2 Jan 56</u>
FOREMAN <u>H. A. Pala</u>	CHIEF BALLISTICIAN	

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
D.E.D.R. & D.P.No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT 762 -
AMM'N. LOT #2
CALIBER .30 L.R.
BULLET Aluminum
CARTRIDGE _____
MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-161	T-44	T-48		T-161	T-44	T-48
NO. OF GUN		3	1	055		3	1	055
ROUNDS IN GUN		4720	871	6522		4836	891	6542
NO. OF BARREL		1	1	1		1	1	1
ROUNDS IN BARREL		4720	871	6522		4836	891	6542
HEAD SPACE		-	2.186"	2.181"		-	2.186"	2.181"
PIN PROTRUSION		-	.053"	.056"		-	.053"	.056"
ROUNDS FIRED		70	20	20		70	20	20
RDS. IN BURST OR GLIPS		70	20	20		70	20	20
NO. OF BURSTS OR GLIPS		1	1	1		1	1	1
GUNNER		Williams	Williams	Williams		Williams	Williams	Williams

GUN FUNCTION

[illegible]

DEFECTS

<u>PRIMER LEAKS</u>								
<u>PRIMER PERFORATIONS</u>								
<u>LOOSE PRIMERS</u>								
<u>CASE SPLITS</u>								
<u>RUPTURE</u>								
<u>STRETCHES</u>								
<u>GAS FLASHES</u>								
<u>BREECH FLAMES</u>								
<u>BREECH SPARKS</u>								
<u>AMM. FUNCTION</u>								
<u>REMARKS:</u>	OK	OK	OK		OK		OK	OK
	Normal Firing					Cold Firing		

REMARKS:

Normal Firing

Cold Firing

GM CAL. 30, B. M1917A1

GM CAL. .30, B. A. C.

6M CAL. 30, B. M1919A4

GM CAL. 30. B. M/191946

R.A. CAL. 30, B. M1918A2

R.U.S. CAL. 30 MI

RECORDED Seixas

RECORDED H. A. Falla

FOREMAN.

R.U.S. CAL..30 M1903A3

PISTOL AUTO CAL. .45 M1911A1

GSM CAL. .45 M3-M3A1

GM GAL..22 M3-M4

GM CAL. 50, B. M2 AC

GM CAL. 50, B. M2 HB

GM CAL. .50 M3 AC

GM CAL. 60 TITLES

GM CAL. .60 T59

GA CAL. 60/20 MK 12

GA 20 MM M3

GA 20MM M24A1

W.O. 51702-02-518 DATE FIRED 11 Jan 56

CHIEF BALLISTICIAN

Powder: WC 846

Charge: 45.4

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE

FUNCTION AND CASUALTY TEST

DEDR and DP No. 7-56

AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT

AMM'V. LOT 3

CALIBER 7.62mm

BULLET Ball

CARTRIDGE Aluminum

MFG. F.A.

GUN DATA

Normal

Cold

TYPE OF GUN	HANGFIRE	T-65	T-44	T-48		T-65	T-44	T-48
NO. OF GUN		472850	1	055		472850	1	055
ROUNDS IN GUN		3915	1031	6682		4185	1261	6912
NO. OF BARREL		18	1	1		18	1	1
ROUNDS IN BARREL		3915	1031	6682		4185	1261	6912
HEAD SPACE		2.183"	2.186"	2.181"		2.183"	2.186"	2.181"
PIN PROTRUSION		.065"	.053"	.056"		.065"	.053"	.056"
ROUNDS FIRED		135	40	40		135	40	40
RDS. IN BURST OR CLIPS		80-55	20	20		80-55	20	20
NO. OF BURSTS OR CLIPS		1-1	2	2		1-1	2	2
GUNNER		Gambino	Williams	Williams		Gambino	Williams	Williams

GUN FUNCTION

GROUP (MS)																	
ZERO (MS)																	

DEFECTS

PRIMER LEAKS									
PRIMER PERFORATIONS									
LOOSE PRIMERS									
CASE SPLITS									
RUPTURE									
STRETCHES									
GAS FLASHES									
BREECH FLAMES									
BREECH SPARKS									
AMM. FUNCTION		OK	OK	OK		*	OK	OK	

REMARKS: * 1 Partial Rupture

GM CAL. 30, B. M1917A1

GM CAL. 30, B. A. C.

GM CAL. 30, B. M1919A4

GM CAL. 30, B. M1919A6

R.A. CAL. 30, B. M1918A2

R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3

PISTOL AUTO CAL. 45 M1911A1

GSM CAL. 45 M3-M3A1

GM CAL. 22 M3-M4

GM CAL. 30, B. M2 AC

GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC

GM CAL. 60 T17E3

GM CAL. 60 T59

GA CAL. 60/20 MK 12

GA 20 MM M3

GA 20 MM M24A1

RECORDER King

FOREMAN John P. West

N.O. 51702-02-518 DATE FIRED 15 Feb 56

CHIEF BALLISTICIAN

Powder: WC 846.4

Charge: 45.5 grs

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE

FUNCTION AND CASUALTY TEST

AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT

AMM'N LOT 762-4

CALIBER 7.62mm

BULLET Ball

CARTRIDGE

MFG. T.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-65	T-161	T-44	T-48
NO. OF GUN	793756	472850	5	1112	055
ROUNDS IN GUN	13710	6020	885	120	8212
NO. OF BARREL	20	18	1	1	1
ROUNDS IN BARREL	1400	6020	685	120	8212
HEAD SPACE	2.183"	2.183"	-	2.187"	2.183"
PIN PROTRUSION	.065"	.064"	-	.056"	.056"
ROUNDS FIRED	250	300	200	120	120
RDS. IN BURST OR GLIPS	50	100	100	20	20
NO. OF BURSTS OR GLIPS	5	3	2	6	6
GUNNER	Cantano	Balcer	Sokoloff	Sokoloff	Sokoloff

GUN FUNCTION

GROUP (MS)	.7	.8	.6	.4	.7														
ZERO (MS)	11.0																		

DEFECTS

PRIMER LEAKS																			
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES																			
BREECH SPARKS																			
AMM. FUNCTION	OK								OK	OK	OK								

REMARKS:

* 9 STRETCHED CASES VERY SEVERELY STRETCHED ON THE VERGE OF RUPTURE

Cold Firing

GM CAL. 30, B. M1917A1

GM CAL. 30, B. A. C.

GM CAL. 30, B. M1919A4

GM CAL. 30, B. M1919A6

R.A. CAL. 30, B. M1918A2

R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3

PISTOL AUTO CAL. 45 M1911A1

GSM CAL. 45 M3-M3A1

GM CAL. 22 M3-M4

GM CAL. 30, B. M2 AG

GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG

GM CAL. 60 T1E5

GM CAL. 60 T59

GA CAL. 60/20 MK 12

GA 20 MM M3

GA 20 MM M24A1

22623

RECORDER King & Williams

W.O. 51702-02-11 DATE FIRED Aug 56

FOREMAN

CHIEF BALLISTICIAN John P. Horst

Powder: WC 846.4
 Charge: 45.5
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LOT 762-4
 CALIBER 302
 BULLET Ball M2
 CARTRIDGE
 MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-65	T-161	T-48	T-44
NO. OF GUN	793756	472850	5	055	1
ROUNDS IN GUN	13460	5720	1085	8562	2673
NO. OF BARREL	20	18	1	1	1
ROUNDS IN BARREL	1150	5720	885	8562	2673
HEAD SPACE	2.183"	2.183"	-	2.183"	2.186"
PIN PROTRUSION	.065"	.064"		.056"	.053"
ROUNDS FIRED	250	300	200	120	120
ROS. IN BURST OR CLIPS	50	100	100	20	20
NO. OF BURSTS OR CLIPS	5	3	2	6	6
GUNNER	Pantino	Balcer	Sokoloff	Sokoloff	Sokoloff

GUN FUNCTION

GROUP (MS)	.5	.4	.4	.5	.6														
ZERO (MS)	11.0																		

DEFECTS

Gas Eroded Head																			
PRIMER LEAKS	149				55														
PRIMER PERFORATIONS																			
LOOSE PRIMERS	5																		
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES					25%														
BREECH FLAMES																			
BREECH SPARKS																			
AMM. FUNCTION	*								OK	OK									

REMARKS:

* 1 Stoppage due to rim shear

Hot Firing

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AG
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 50 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AG	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20 MM M24A1
RECORDER King & Williams		22623
FOREMAN	CHIEF BALLISTICIAN John P. Wexat	W.O. 51702-02-11 DATE FIRED Aug 56

Powder: WC 846.4

Charge: 45.5 grs

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R&DP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N LOT 762-4
CALIBER 7.62mm
BULLET Ball
CARTRIDGE
MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE		T-65	T-161	T-48	T-44		
NO. OF GUN	793756		472850	5	055	1		
ROUNDS IN GUN	14310		5120	705	8442	2553		
NO. OF BARREL	20		18	1	1	1		
ROUNDS IN BARREL	2000		5120	505	8442	2553		
HEAD SPACE	2.183"		2.183"	-	2.183"	2.186"		
PIN PROTRUSION	.065		.064"	-	.056"	.056"		
ROUNDS FIRED	600		300	200	120	120		
RDS. IN BURST OR GLIPS	50		100	100	20	20		
NO. OF BURSTS OR GLIPS	12		3	2	6	6		
GUNNER	Pantano		Balcer	Sokoloff	Sokoloff	Sokoloff		

GUN FUNCTION

GROUP (MS)	.5	.5	.5	.4	.4	.5	.5	.5	.5	.4	.5	.6				
ZERO (MS)	11.0															

DEFECTS

PRIMER LEAKS	8															
PRIMER PERFORATIONS																
LOOSE PRIMERS																
CASE SPLITS																
RUPTURE Partial							1									
STRETCHES																
GAS FLASHES					25%											
BREECH FLAMES																
BREECH SPARKS																
AMM. FUNCTION									OK		OK					

REMARKS:

Normal Firing

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 M1

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AC
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
GM CAL. 60 T1E5
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER King & Williams

W.O. 51702-02-11 DATE FIRED Aug 56

FOREMAN

CHIEF BALLISTICIAN John P. Werst

PRIMER Rem #39				REF. RDS. 8-55
	SPEC:			CTG. A.P.30 T93E2 (L.R.)
REC. NO.	REL. NO.	TRFD.	A.L. 40633 CHG. 45.6	
REC. NO. F.A. Universal #9	REL. NO. R-51	TRFD. 630	C-357 R-446 "T"	
REC. NO.	REL. NO.	TRFD.	V.V. 2748 FIS	
REC. NO. F.A. Universal #9	REL. NO. G-67	TRFD. 845	P.V. 45,400 psi	

[illegible]

ORDBA FORM SP 931 REV MAR 61

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
AMM'N. LOT 5
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. F.A.

		Normal		GUN DATA		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-161E2				T-52		T-52	
NO. OF GUN		5				4		4	
ROUNDS IN GUN		10385				700		1000	
NO. OF BARREL		1				1		1	
ROUNDS IN BARREL		7793				700		1000	
HEAD SPACE		-				-		-	
PIN PROTRUSION		-				-		-	
ROUNDS FIRED		308				300		300	
RDS. IN BURST OR GLIPS		100-8				100		100	
NO. OF BURSTS OR GLIPS		3-1				3		3	
GUNNER		Robinson				Robinson		Robinson	

GUN FUNCTION

[illegible]

DEFECTS

<u>PRIMER LEAKS</u>		13			169	4	
<u>PRIMER PERFORATIONS</u>							
<u>LOOSE PRIMERS</u>							
<u>GASE SPLITS</u>							
<u>RUPTURE</u>							
<u>STRETCHES</u>							
<u>GAS FLASHES</u>							
<u>BREECH FLAMES</u>							
<u>BREECH SPARKS</u>							
<u>AMM. FUNCTION</u>						*	

REMARKS: Bad Profile

~~* 1 Gas Eroded head with 1 S-J-K-L Case Split~~

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

RECORDED Seixas

FOREMAN

R.U.S. CAL..30 M1903A3
PISTOL AUTO CAL..45 M1911A1
GSM CAL..45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..30, B. M2 AC
GM CAL..30, B. M2 HD

6M CAL. .50 M3 AC
6M CAL. .60 T17E5
6M CAL. .60 T59
6A CAL. .60/20 MK 12
6A 20 MM M3
6A 20MM M24A1

W. O. 51702-02-11 DATE FIRED 9 May 57.

CHIEF BALLISTICIAN.

Primer: Rem #39

PRIMER LOT _____
 AMM'N. LOT 5
 CALIBER 7.62mm
 BULLET _____
 CARTRIDGE Aluminum
 MFG. F.A.

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R&D P 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
AMM'N. LOT 5
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. P.A.

		Normal		GUN DATA		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-48			T-48		T-48		
NO. OF GUN		4197			4197		4197		
ROUNDS IN GUN		6119			6319		6519		
NO. OF BARREL		1			1		1		
ROUNDS IN BARREL		6119			6319		6519		
HEAD SPACE Br.		2.183"			2.183"		2.183"		
PIN PROTRUSION		.063"			.063"		.063"		
ROUNDS FIRED		200			200		200		
RDS. IN BURST OR CLIPS		20			20		20		
NO. OF BURSTS OR CLIPS		10			10		10		
GUNNER		Robinson			Robinson		Robinson		

GUN FUNCTION

[illegible]

DEFECTS

PRIMER LEAKS					65		3	
PRIMER PERFORATIONS								
LOOSE PRIMERS								
CASE SPLITS								
RUPTURE								
STRETCHES								
GAS FLASHES								
BREECH FLAMES								
BREECH SPARKS								
AMM. FUNCTION		OK						

REMARKS: Bad Profile Cases

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

RECORDER Seixas

FOREMAN-

R.U.S. CAL..30 M1903A3
PISTOL AUTO CAL..45 M1911A1
GSM CAL..45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..30, B. M2 AC
GM CAL..50, B. M2 HB

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

W.O. 51702-02-11 DATE FIRED 9 May 57

CHIEF BALLISTICIAN.

PRIMER LOT _____
AMM'N. LOT 5
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. P.A.

		GUN DATA			
		Normal		Hot	Cold
TYPE OF GUN	HANGFIRE	T-44		T-44	T-44
NO. OF GUN		1355		1355	1355
ROUNDS IN GUN		5280		5480	5680
NO. OF BARREL		1		1	1
ROUNDS IN BARREL		5280		5480	5680
HEAD SPACE		2.186"		2.186"	2.186"
PIN PROTRUSION		.048"		.048"	.048"
ROUNDS FIRED		200		200	200
RDS. IN BURST OR GLIPS		20		20	20
NO. OF BURSTS OR GLIPS		10		10	10
GUNNER		Robinson		Robinson	Robinson

GUN FUNCTION

[illegible]

DEFECTS

PRIMER LEAKS					82			
PRIMER PERFORATIONS								
LOOSE PRIMERS								
CASE SPLITS								
RUPTURE								
STRETCHES								
GAS FLASHES								
BREECH FLAMES								
BREECH SPARKS								
AMM. FUNCTION		OK					OK	

REMARKS: Bad Profile Cases

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL.30 M1903A3
PISTOL AUTO CAL..45 M1911A1
GSM CAL..45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..50, B. M2 AG
GM CAL..50, B. M2 HB

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER _____ Seixas

W.O. 51702-02-11 DATE FIRED 9 May 57

FOREMAN.

CHIEF BALLISTICIAN

Powder: WC 846
 Charge: 45.8 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 R&D P No. 7-56
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N LOT 5
 CALIBER 7.62mm
 BULLET
 CARTRIDGE Aluminum
 MFG. F.A.

TYPE OF GUN	GUN DATA							
	HANGFIRE	Normal	Hangfire		Hot	Hangfire		Cold
NO. OF GUN			793759			793759		793759
ROUNDS IN GUN			15110			15510		15310
NO. OF BARREL			B-4			B-4		B-4
ROUNDS IN BARREL			500			900		700
HEAD SPACE Br.			2.184"			2.184"		2.184"
PIN PROTRUSION			.061"			.061"		.061"
ROUNDS FIRED			200			200		200
RDS. IN BURST OR CLIPS			50			50		50
NO. OF BURSTS OR CLIPS			4			4		4
GUNNER			Reynolds			Reynolds		Reynolds

GUN FUNCTION															
GROUP (MS)	.4	.5	.5	.5			.4	.4	1.0	.4			.4	.3	.4
ZERO (MS)	10.9						10.9						10.9		

DEFECTS															
Primer Leaks-Small					6								34		1
PRIMER LEAKS-Large					1								69		
PRIMER PERFORATIONS															
LOOSE PRIMERS															
CASE SPLITS															
Blown Primer													8		
Gas Eroded Heads													16		
GAS FLASHES															
BREECH FLAMES															
BREECH SPARKS															
AMM. FUNCTION															

REMARKS: Bad Profile Cases

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AC
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
 GM CAL. 60 T17E5
 GM CAL. 60 T59
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

RECORDER Pantano - Seixas

W.O. 51702-02-11 DATE FIRED 9 May 57

FOREMAN

CHIEF BALLISTICIAN

Powder: WC 846
 Charge: 45.5 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
 RDP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
 AMMUN. LOT. 6
 CALIBER 7.62mm
 BULLET _____
 CARTRIDGE Aluminum
 MFG. P.A.

		Normal			GUN DATA			Hot	Gold	Normal
TYPE OF GUN	HANGFIRE	T-161						T-161	T-161	T-161
NO. OF GUN		5						5	5	5
ROUNDS IN GUN		17385						16985	16385	17510
NO. OF BARREL		2						2	2	2
ROUNDS IN BARREL		9393						8993	8393	9518
HEAD STUCK Br.		-						-	-	-
PIN PROTRUSION		-						-	-	-
ROUNDS FIRED		400						600	600	125
RDS. IN BURST OR CLIPS		100						100	100	100-25
NO. OF BURSTS OR CLIPS		4						6	6	1-1
GUNNER		Robinson						Robinson	Robinson	Robinson

GUN FUNCTION

GROUP (MS) _____
 ZERO (MS) _____

		DEFECTS					
Blown Primer					3		
PRIMER LEAKS		2			120	10	1
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS						J-K-L, S-I-K-L	
RUPTURE		25(K)			16		
STUCK Gas Eroded Head						2	
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION							

REMARKS: Good Work Bad Profile

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI
 RECORDER Seixas

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AC
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
 GM CAL. 60 T17E5
 GM CAL. 60 T59
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

W.O. 51702-02-11 DATE FIRED 16 May 57

FOREMAN _____ CHIEF BALLISTICIAN _____

Primer: Rem #39

PRIMER LOT _____
AMM'N. LOT 6
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. F.A.

		Normal	GUN DATA	Hot	Cold
TYPE OF GUN	HANGFIRE	T-44		T-44	T-44
NO. OF GUN		1355		1355	1355
ROUNDS IN GUN		6280		6080	5880
NO. OF BARREL		1		1	1
ROUNDS IN BARREL		6280		6080	5880
HEAD **** Bt.		2.186"		2.186"	2.186"
PIN PROTRUSION		.048"		.048"	.048"
ROUNDS FIRED		200		200	200
RDS. IN BURST OR CLIPS		20		20	20
NO. OF BURSTS OR CLIPS		10		10	10
GUNNER		Robinson		Robinson	Robinson

[illegible]

Gas Eroded Head		1	DEFECTS		1	1	
PRIMER LEAKS		1			34		
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE							
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM FUNCTION							

REMARKS: Bad Profile

GM CAL. .50 M3 AC
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

W.O. 51702-02-11 DATE FIRED 8 May 57

CHIEF BALLISTICIAN.

Powder: WC 846
 Charge: 45.5 gra.
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 RDP No. 7-56
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LOT. 6
 CALIBER 7.62 mm
 BULLET
 CARTRIDGE Aluminum
 MFG. F.A.

GUN DATA								
TYPE OF GUN	HANGFIRE	Normal			Hot			Cold
		T-48			T-48			T-48
NO. OF GUN		4197			4197			4197
ROUNDS IN GUN		6819			6719			7119
NO. OF BARREL		1			1			1
ROUNDS IN BARREL		6819			6719			7119
HEAD SPACE		2.183"			2.183"			2.183"
PIN PROTRUSION		.063"			.063"			.063"
ROUNDS FIRED		100			100			100
RDS. IN BURST OR GLIPS		20			20			20
NO. OF BURSTS OR GLIPS		5			5			5
GUNNER		Robinson			Robinson			Robinson

GUN FUNCTION															
GROUP (MS)															
ZERO (MS)															

DEFECTS															
PRIMER LEAKS									5						
PRIMER PERFORATIONS															
LOOSE PRIMERS															
CASE SPLITS															
RUPTURE															
STRETCHES															
GAS FLASHES															
BREECH FLAMES															
BREECH SPARKS															
AMM. FUNCTION														OK	

REMARKS: Good Work

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI
 R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AC
 GM CAL. 50, B. M2 HB
 GM CAL. 50 M3 AC
 GM CAL. 60 T17E5
 GM CAL. 60 T59
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20MM M24A1
 RECORDER Seixas
 FOREMAN
 W.O. 51702-02-11 DATE FIRED 8 May 57
 CHIEF BALLISTICIAN

Primer: Rem #39

PRIMER LOT _____
AMM'N. LOT 6
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. F.A.

		Normal			Hot			Cold	
TYPE OF GUN	HANGFIRE	T-48			T-48		T-48		
NO. OF GUN		4197			4197		4197		
ROUNDS IN GUN		6919			6619		7019		
NO. OF BARREL		1			1		1		
ROUNDS IN BARREL		6919			6619		7019		
HEAD XXXX Br.		2.183"			2.183"		2.183"		
PIN PROTRUSION		.063"			.063"		.063"		
ROUNDS FIRED		100			100		100		
RDS. IN BURST OR CLIPS		20			20		20		
NO. OF BURSTS OR CLIPS		5			5		5		
GUNNER		Robinson			Robinson		Robinson		

[illegible]

PRIMER LEAKS					3			
PRIMER PERFORATIONS								
LOOSE PRIMERS								
GASE SPLITS								
RUPTURE								
STRETCHES								
GAS FLASHES								
BREECH FLAMES								
BREECH SPARKS								
AMM. FUNCTION		OK					OK	

REMARKS: Bad Profile

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

W. O. 51702-02-11 DATE FIRED 8 May 57

FOREMAN _____ **CHIEF BALLISTICIAN**

ORDBA FORM SP-2 MAR 52 (FORMERLY ORDBA 675 WHICH IS OBSOLETE)

ARMY-RARITAN ARSENAL (NMPC), METUCHEN, NJ-10-227.

Powder: WC 846	FRANKFORD ARSENAL PROOF HOUSE FUNCTION AND CASUALTY TEST RDP# 7-56 AUTOMATIC & SEMI-AUTOMATIC WEAPONS	PRIMER LOT
Charge: 45.5 gra		AMM'N. LOT 6
Primer: Rem #39		CALIBER 7.62mm
T-65 Gun		BULLET CARTRIDGE Aluminum MFG. F.A.

TYPE OF GUN	GUN DATA							
	Normal				Hot			Cold
	HANGFIRE				Hangfire			Hangfire
NO. OF GUN	793756				793756			793756
ROUNDS IN GUN	16610				16610			17010
NO. OF BARREL	B-4				B-4			B-6
ROUNDS IN BARREL	1700				1900			200
HEAD STAKE BT.	2.184"				2.184"			2.186"
PIN PROTRUSION	.061"				.061"			.061"
ROUNDS FIRED	200				200			200
RDS. IN BURST OR CLIPS	50				50			50
NO. OF BURSTS OR CLIPS	4				4			4
GUNNER	Pantano				Pantano			Pantano

GUN FUNCTION																
GROUP (MS)	.4	.4	.3	.3			.4	.4	.4	.4			.3	.4	.3	.4
ZERO (MS)	11.1						11.1						11.1			

DEFECTS															
Blown Primer															3
PRIMER LEAKS															24
PRIMER PERFORATIONS															
LOOSE PRIMERS															
CASE SPLITS															8K
RUPTURE															1K
SOME Gas Eroded Head 1															8
GAS FLASHES															
BREECH FLAMES															
BREECH SPARKS															
AMM. FUNCTION															

REMARKS: Good Work

Requirements:
 Cal. 30, Ball M2
 Shell not exceed 2.5 milliseconds

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AG
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 30, B. M2 AG	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20 MM M24A1

RECORDER: Langer - Seixas W.O. 51702-02-11 DATE FIRED 27 May 57

FOREMAN: Asst. CHIEF BALLISTICIAN H. A. Fala

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
RDP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
AMM'N. LOT 7
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. FA

		GUN DATA						
		Normal	Normal		Hot	Hot	Gold	Gold
TYPE OF GUN	HANGFIRE	T-161	T-161		T-161	T-52	T-161	T-52
NO. OF GUN		5	5		5	4	5	4
ROUNDS IN GUN		18010	18610		19610	2200	19110	1600
NO. OF BARREL		2	1		1	1	1	1
ROUNDS IN BARREL		6425	6885		7885	2200	7385	1600
HEAD SPACE		-	-		-	-	-	-
PIN PROTRUSION		-	-		-	-	-	-
ROUNDS FIRED		500	600		500	600	500	600
RDS. IN BURST OR CLIPS		100	100		100	100	100	100
NO. OF BURSTS OR CLIPS		5	6		5	6	5	6
GUNNER		Robinson	Robinson		Robinson	Robinson	Robinson	Robinson

[illegible]

Gas Eroded Heads		12		18		160		222		20		21	
PRIMER LEAKS								1					
PRIMER PERFORATIONS													
LOOSE PRIMERS													
CASE SPLITS													
RUPTURE		3-J;43-K				22-K		1-K					
SPRAYS/Blown Primer						3		2					
GAS FLASHES													
BREECH FLAMES													
BREECH SPARKS													
AMM. FUNCTION		*											
REMARKS:		Good Work											

* Gun No. T161 No. 5 Bar #2 out of service due to eroded chamber

FOREMAN—

GM CAL. 50, B. M2 HB

GA 20 MM M24x1

W. O. 51702-02-11 DATE FIRED 21 May 57

CHIEF BALLISTICIAN

ORDBA FORM SP-2 MAR 52 (FORMERLY ORDBA 675 WHICH IS OBSOLETE)

ARMY-RARITAN ARSENAL (NMPC), METUCHEN, NJ-58-387 :

Powder: WC 846.
 Charge: 45.0 grs
 Primer: Rem #39
 T-65

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 RDP No. 7-56
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LOT 7
 CALIBER 7.62mm
 BULLET
 CARTRIDGE Aluminum
 MFG. FA

TYPE OF GUN	Normal				Hot				Cold			
	HANGFIRE	Hangfire			Hangfire				Hangfire			
NO. OF GUN		793756			793756				793756			
ROUNDS IN GUN		17210			17410				17610			
NO. OF BARREL		B-6			B-6				B-7			
ROUNDS IN BARREL		400			600				300			
HEAD WEEK Br.		2.186"			2.186"				2.185"			
PIN PROTRUSION		.065"			.065"				.065"			
ROUNDS FIRED		200			200				200			
RDS. IN BURST OR CLIPS		50			50				50			
NO. OF BURSTS OR CLIPS		4			4				4			
GUNNER		Pantano			Pantano				Pantano			

GUN FUNCTION

GROUP (MS)	.4	.4	.3	.4				.4	.5	.4	.3		.4	.5	.4	.4
ZERO (MS)	11.0							11.0					11.0			

DEFECTS

Eroded Heads								13								
PRIMER LEAKS	5							91					7			
PRIMER PERFORATIONS																
LOOSE PRIMERS																
CASE SPLITS																
RUPTURE								6-K					1-K			
SPRINGS Blown Primers								3								
GAS FLASHES																
BREECH FLAMES																
BREECH SPARKS																
AMM. FUNCTION																

REMARKS: Good Work

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 30, B. M2 AC
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
 GM CAL. 60 T1F5.
 GM CAL. 60 T59
 GA CAL. 60/80 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

RECORDER Langer - Seixas

M.O. 51702-02-11 DATE FIRED 27 May 57

FOREMAN

CHIEF BALLISTICIAN

Powder: WC 846
Charge: 45.8 gra
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
RDP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 7
CALIBER 7.62mm
BULLET
CARTRIDGE Aluminum
MFG. FA

TYPE OF GUN	HANGFIRE	Normal			Hot			Cold		
		T-44			T-44			T-44		
NO. OF GUN		1355			1355			1355		
ROUNDS IN GUN		6780			6480			6680		
NO. OF BARREL		1			1			1		
ROUNDS IN BARREL		6780			6480			6680		
HEAD SPACE		2.187"			2.187"			2.187"		
PIN PROTRUSION		.051"			.051"			.051"		
ROUNDS FIRED		100			100			100		
RODS IN BURST OR CLIPS		20			20			20		
NO. OF BURSTS OR CLIPS		5			5			5		
GUNNER		Robinson			Robinson			Robinson		

GUN FUNCTION											
GROUP (MS)											
ZERO (MS)											

DEFECTS											
PRIMER LEAKS						25					
PRIMER PERFORATIONS											
LOOSE PRIMERS											
CASE SPLITS											
RUPTURE											
STRETCHES											
GAS FLASHES											
BREECH FLAMES											
BREECH SPARKS											
AMM. FUNCTION			OK							OK	

REMARKS: Bad Profile

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 M1
R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AG
GM CAL. 50, B. M2 HB
GM CAL. 50 M3 AG
GM CAL. 60 T1E5
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1
RECORDER Seixas
FOREMAN
W.O. 51702-02-11 DATE FIRED 10 May 57
CHIEF BALLISTICIAN

Powder: WC 846
Charge: 45.8
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
RDP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 7
CALIBER 7.62mm
BULLET
CARTRIDGE Aluminum
MFG. FA

		GUN DATA					
		Normal			Hot		Cold
TYPE OF GUN	HANGFIRE	T-48			T-48		T-48
NO. OF GUN		4197			4197		4197
ROUNDS IN GUN		7519			7219		7319
NO. OF BARREL		1			1		1
ROUNDS IN BARREL		7519			7219		7319
HEAD BRASS Br.		2.183"			2.183"		2.183"
PIN PROTRUSION		.061"			.061"		.061"
ROUNDS FIRED		100			100		100
RDS. IN BURST OR CLIPS		20			20		20
NO. OF BURSTS OR CLIPS		5			5		5
GUNNER		Robinson			Robinson		Robinson

GUN FUNCTION											
GROUP (MS)											
ZERO (MS)											

DEFECTS							
PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE					64 JK		
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK				OK	

REMARKS: Bad Profile

GM CAL 30, B M1917A1
GM CAL 30, B. A C.
GM CAL 30, B. M1919A4
GM CAL 30, B. M1919A6
R.A. CAL 30, B. M1918A2
R.U.S. CAL 30 M1

R.U.S. CAL 30 M1903A3
PISTOL AUTO CAL .45 M1911A1
GSM CAL .45 M3-M3A1
GM CAL .22 M3-M4
GM CAL .50, B. M2 AG
GM CAL 50, B. M2 HB

GM CAL 50 M3 AG
GM CAL .60 T17E5
GM CAL .60 T59
GA CAL .60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

RECORDER Seixas

W.O. 51702-02-11 DATE FIRED 10 May 57

FOREMAN

CHIEF BALLISTICIAN

Primer: Rem #39

PRIMER LOT _____
AMM'N LOT 7 _____
CALIBER 7.62mm _____
BULLET _____
CARTRIDGE Aluminum _____
MFG. F.A. _____

		GUN DATA			Normal		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-44			T-44		T-44		T-44	
NO. OF GUN		1355			1355		1355		1355	
ROUNDS IN GUN		6880			6580		6380		6380	
NO OF BARREL		1			1		1		1	
ROUNDS IN BARREL		6880			6580		6380		6380	
HEAD SPACE Br.		2.187"			2.187"		2.187"		2.187"	
PIN PROTRUSION		.051"			.051"		.051"		.051"	
ROUNDS FIRED		100			100		100		100	
RDS. IN BURST OR CLIPS		20			20		20		20	
NO. OF BURSTS OR CLIPS		5			5		5		5	
GUNNER		Robinson			Robinson		Robinson		Robinson	

[illegible]

<u>PRIMER LEAKS</u>					37		
<u>PRIMER PERFORATIONS</u>							
<u>LOOSE PRIMERS</u>							
<u>CASE SPLITS</u>							
<u>RUPTURE</u>							
<u>STRESSER FOLDS</u>					60		
<u>GAS FLASHES</u>							
<u>BREECH FLAMES</u>							
<u>BREECH SPARKS</u>							
<u>AMM. FUNCTION</u>			OK				OK
<u>REMARKS:</u>	Long Cartridge.						

REMARKS. Long Cartridge.

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R. A. CAL. 30, B. M1918A2
R. U. S. CAL. 30 MI

R.U.S. GAL..30 M1903A3
PISTOL AUTO GAL..45 M1911A1
GSM GAL..45 M3-M3A1
GM GAL..22 M3-M4
GM GAL..30, B. M2 AG
GM GAL..30, B. M2 HB

GM CAL 50 M3 AG
GM CAL 60 T17E5
GM CAL 60 T59
GA CAL 60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDED _____ Seixas

W.O. 51702-02-11 DATE FIRED 10 May 57

FOREMAN

CHIEF BALLISTICIAN

Powder: WC 846
 Charge: 45.8 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 RDP No. 7-56
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
 AMM'N. LOT 7
 CALIBER 7.62mm
 BULLET _____
 CARTRIDGE Aluminum
 MFG. FA

		GUN DATA					
		Normal		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-48		T-48		T-48	
NO. OF GUN		4197		4197		4197	
ROUNDS IN GUN		7419		7619		7719	
NO. OF BARREL		1		1		1	
ROUNDS IN BARREL		7419		7619		7719	
HEAD SPACE Br		2.183"		2.183"		2.183"	
PIN PROTRUSION		.061"		.061"		.061"	
ROUNDS FIRED		100		100		100	
RDS. IN BURST OR CLIPS		20		20		20	
NO. OF BURSTS OR CLIPS		5		5		5	
GUNNER		Robinson		Robinson		Robinson	

GUN FUNCTION													
GROUP (MS)													
ZERO (MS)													

DEFECTS							
PRIMER LEAKS					12		
PRIMER PERFORATIONS							
LOOSE PRIMERS							
GASE SPLITS							
RUPTURE							
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK				OK	
REMARKS	Lor. Cartridge						

GM CAL. 30, B M1917A1
 GM CAL. 30, B 4 C
 GM CAL. 30, B M1919A4
 GM CAL. 30, B M1919A6
 R.A. CAL. 30, B M1918A2
 R.U.S. CAL. 30 MI
 REGORDER _____
 FOREMAN _____

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AG
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG
 GM CAL. 60 T17E5
 GM CAL. 60 T39
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

W.O. 51702-02-11 DATE FIRED 10 May 57
 CHIEF BALLISTICIAN _____

Primer: Rem #39

PRIMER LOT _____
AMM'N. LOT 8
CALIBER 7.62mm
BULLET _____
CARTRIDGE Aluminum
MFG. F.A. _____

		Normal		GUN DATA		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-44			T-44			T-44	
NO. OF GUN		1355			1355			1355	
ROUNDS IN GUN		7281			7481			7680	
NO OF BARREL		1			1			1	
ROUNDS IN BARREL		7281			7481			7680	
HEAD SPACE Br.		2.187"			2.187"			2.187"	
PIN PROTRUSION		.051"			.051"			.051"	
ROUNDS FIRED		100			100			100	
RDS. IN BURST OR GLIPS		20			20			20	
NO. OF BURSTS OR GLIPS		5			5			5	
GUNNER		Robinson			Robinson			Robinson	

[illegible]

<u>PRIMER LEAKS</u>		1			56			
<u>PRIMER PERFORATIONS</u>								
<u>LOOSE PRIMERS</u>								
<u>CASE SPLITS</u>								
<u>RUPTURE</u>					1-J			
<u>STRETCHES</u>								
<u>GAS FLASHES</u>								
<u>BREECH FLAMES</u>								
<u>BREECH SPARKS</u>								
<u>AMM. FUNCTION</u>								OK
<u>REMARKS:</u>	Long Length							

REMARKS: Long Length

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

W.O. 51702-02-11 DATE FIRED 22 May 57

FOREMAN _____ CHIEF BALLISTICIAN.

Primer: Rem #39

PRIMER LOT _____
 AMM'N. LOT 8
 CALIBER 7.62mm
 BULLET _____
 CARTRIDGE Aluminum
 MFG. F.A.

		GUN DATA			
		Normal		Hot	Cold
TYPE OF GUN	HANGFIRE	T-48		T-48	T-48
NO. OF GUN		4124		4124	4124
ROUNDS IN GUN		7370		7470	7670
NO. OF BARREL		1		1	1
ROUNDS IN BARREL		7370		7470	7670
HEAD SPACE Bt.		2.186"		2.186"	2.186"
PIN PROTRUSION		.053"		.053"	.053w
ROUNDS FIRED		100		100	100
RDS. IN BURST OR GLIPS		20		20	20
NO. OF BURSTS OR GLIPS		5		5	5
GUNNER		Robinson		Robinson	Robinson

[illegible]

<u>PRIMER LEAKS</u>					47			
<u>PRIMER PERFORATIONS</u>								
<u>LOOSE PRIMERS</u>								
<u>GASE SPLITS</u>								
<u>RUPTURE</u>					2-J			
<u>STRETCHES</u>								
<u>GAS FLASHES</u>								
<u>BREECH FLAMES</u>								
<u>BREECH SPARKS</u>								
<u>AMM. FUNCTION</u>	OK						OK	

REMARKS: Long Length

GM CAL. 50 M3 AC
GM CAL. 60 T17E3
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

W. O. 51702-02-11 DATE FIRED 22 May 57

FOREMAN _____ **CHIEF BALLISTICIAN**

Powder: WC 846
 Charge: 45.8 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 RDP No. 7-56
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N LOT 8
 CALIBER 7.62
 BULLET
 CARTRIDGE Aluminum
 MFG. F.A.

GUN DATA								
TYPE OF GUN	HANGFIRE	Normal			Hot			Cold
		T-44			T-44			T-44
NO. OF GUN		1355			1355			1355
ROUNDS IN GUN		7381			7581			7780
NO. OF BARREL		1			1			1
ROUNDS IN BARREL		7381			7581			7780
HEAD STAGE BR.		2.187"			2.187"			2.187"
PIN PROTRUSION		.051			.051"			.051"
ROUNDS FIRED		100			100			100
RDS. IN BURST OR CLIPS		20			20			20
NO. OF BURSTS OR CLIPS		5			5			5
GUNNER		Robinson			Robinson			Robinson

GUN FUNCTION															
GROUP (MS)															
ZERG (MS)															

DEFECTS							
PRIMER LEAKS		1			68		
PRIMER PERFORATIONS							
LOOSE PRIMERS							
GASE SPLITS							
RUPTURE						1-K	
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION							

REMARKS: Bad Profile

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AC
GM CAL. 30, B. A. G.	PISTOL AUTO CAL. 43 M1911A1	GM CAL. 60 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 43 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1919A2	GM CAL. 30, B. M2 AC	GA 20 MM M3
R.U.S. CAL. 30 MI	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER Seixas		W.O. 51702-02-11 DATE FIRED 22 May 57
FOREMAN	CHIEF BALLISTICIAN	

**FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
RDP No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS**

PRIMER LOT _____
AMM'N. LOT 8 _____
CALIBER 7.62mm _____
BULLET _____
CARTRIDGE Aluminum _____
MFG. P.A. _____

		GUN DATA			
		Normal	Normal	Hot	Cold
TYPE OF GUN	HANGFIRE	T-48	T-48	T-48	T-48
NO. OF GUN		4197	4124	4124	4124
ROUNDS IN GUN		8059	7220	7570	7770
NO. OF BARREL		1	1	1	1
ROUNDS IN BARREL		8059	7220	7570	7770
HEAD SPACE		2.183"	2.186"	2.186"	2.186"
PIN PROTRUSION		.061	.053	.053"	.053"
ROUNDS FIRED		40	60	100	100
RDS. IN BURST OR GLIPS		20	20	20	20
NO. OF BURSTS OR GLIPS		2	3	5	5
GUNNER		Robinson	Robinson	Robinson	Robinson

[illegible]

PRIMER LEAKS				47			
PRIMER PERFORATIONS							
LOOSE PRIMERS							
GASE SPLITS							
RUPTURE		1-K					
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		*				OK	

* Gun T-48 No. 4197 Test discontinued - Eroded chamber due to burn thru in case

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

W.O. 51702-02-11 DATE FIRED 23 May 57

FOREMAN _____ **CHIEF BALLISTICIAN**

Powder: WC 846	FRANKFORD ARSENAL PROOF HOUSE FUNCTION AND CASUALTY TEST R.D.P. No. 7-56 AUTOMATIC & SEMI-AUTOMATIC WEAPONS	PRIMER LOT _____
Charge: 45.8 grs		AMM'N. LOT <u>8</u>
Primer: Rem #39		CALIBER <u>7.62mm</u>
		BULLET _____
		CARTRIDGE <u>Aluminum</u>
		MFG. <u>F.A.</u>

TYPE OF GUN	Normal				Hot				Cold			
	HANGFIRE				Hangfire				Hangfire			
NO. OF GUN	793756				793756				793756			
ROUNDS IN GUN	17810				18010				18210			
NO. OF BARREL	B-7				B-7				B-7			
ROUNDS IN BARREL	500				700				900			
HEAD 8.75 Br.	2.185"				2.185"				2.185"			
PIN PROTRUSION	.065"				.065"				.065"			
ROUNDS FIRED	200				200				200			
RDS. IN BURST OR CLIPS	50				50				50			
NO. OF BURSTS OR CLIPS	4				4				4			
GUNNER	Pantow				Pantow				Pantow			

GUN FUNCTION												
GROUP (MS)	.4	.3	.4	.5				.3	.4	.4	.5	
ZERO (MS)	11.3							11.3				

DEFECTS												
Eroded Heads												27
PRIMER LEAKS	11							117				
PRIMER PERFORATIONS												
LOOSE PRIMERS												
CASE SPLITS											1-J	
RUPTURE												
STRETCHES												
GAS FLASHES												
BREECH FLAMES												
BREECH SPARKS												
AMM. FUNCTION												
REMARKS:	Good Work											

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AG
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T1E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AG	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER <u>Langer-Seixas</u>		W.O. 51702-02-11 DATE FIRED 20 May 57
FOREMAN _____	CHIEF BALLISTICIAN _____	

Powder: WC 846
 Charge: 45.8
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
 R.D.P. No. 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
 AMM'N LOT 8
 GALIBER 7.62mm
 BULLET _____
 CARTRIDGE Aluminum
 MFG. F.A.

GUN DATA							
		Normal		Hot		Cold	
TYPE OF GUN	HANGFIRE	T-52		T-52		T-52	
NO. OF GUN		4		4		4	
ROUNDS IN GUN		2428		3028		2728	
NO. OF BARREL		1		1		1	
ROUNDS IN BARREL		2428		3028		2728	
HEAD SPACE Br.		-		-		-	
PIN PROTRUSION		-		-		-	
ROUNDS FIRED		228		300		300	
RDS. IN BURST OR CLIPS		100-28		100		100	
NO. OF BURSTS OR CLIPS		2-1		3		3	
GUNNER		Robinson		Robinson		Robinson	

GUN FUNCTION															
GROUP (MS)															
ZERO (MS)															

DEFECTS							
PRIMER LEAKS		26			198		42
PRIMER PERFORATIONS							
LOOSE PRIMERS							
GASE SPLITS							
RUPTURE		1-K					
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION							

REMARKS: Good Work

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AC
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3 M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3 M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AC	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20 MM M24A1

RECORDER Seixas W.O. 51702-02-11 DATE FIRED 24 May 57

FOREMAN _____ CHIEF BALLISTICIAN _____

Powder: WC 846
 Charge: 45.8
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
 FUNCTION AND CASUALTY TEST
 AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LCT 11-A-1
 CALIBER 7.62 mm
 BULLET Ball
 CARTRIDGE Aluminum
 MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE								
NO. OF GUN			T-44						
ROUNDS IN GUN			11.91						
NO. OF BARREL			3460						
ROUNDS IN BARREL			1						
NO. SPACE B.S.			3460						
PIN PROTRUSION			2.186"						
ROUNDS FIRED			.055"						
RDS. IN BURST OR CLIPS			25						
NO. OF BURSTS OR CLIPS			20 - 5						
GUNNER			1 - 1						
			Robinson						

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

PRIMER LEAKS			3																
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES																			
BREECH SPARKS																			
AMM. FUNCTION																			

REMARKS: Hot Firing:

* 11 stoppages: 11 blown primers with gas eroded heads

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 M1

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AG
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG
 GM CAL. 60 T1E5
 GM CAL. 60 T59
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

RECORDER Seixas

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN

John P. Werst

Powder: DMR 4475	FRANKFORD ARSENAL PROOF HOUSE FUNCTION AND CASUALTY TEST AUTOMATIC & SEMI-AUTOMATIC WEAPONS	PRIMER LOT
Lots: 54		AMM'N. LOT <u>11-A-2</u>
Charge: 39.5		CALIBER <u>7.62mm</u>
Primer: Rem #39		BULLET <u>Ball</u>
		CARTRIDGE <u>Aluminum</u>
		MFG. <u>P.A.</u>

GUN DATA

TYPE OF GUN	HANGFIRE								
			T-44						
NO. OF GUN			1491						
ROUNDS IN GUN			3505						
NO. OF BARREL			1						
ROUNDS IN BARREL			3505						
WEIGHT SPACE B.S.			2.156"						
PIN PROTRUSION			.055"						
ROUNDS FIRED			25						
RDS. IN BURST OR GLIPS			20 - 5						
NO. OF BURSTS OR GLIPS			1 - 1						
GUNNER			Robinson						

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

PRIMER LEAKS			6																
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES							numerous												
BREECH SPARKS							numerous												
AMM. FUNCTION							*												

REMARKS: Not Firing:

* 6 stoppages: 4 stoppages - blown primers with gaseroded heads

1 stoppage - loose primer (permissible) with blow back of metal
also a complete rim shear

1 stoppage - Primer leak with a complete rim shear

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 45 M3-M4
GM CAL. 50, B. M2 AG
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG
GM CAL. 60 T17E5
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

RECORDER Seixas

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: WC 846
Charge: 45.8
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 12-A-1
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE								
			T-52						
NO. OF GUN			10						
ROUNDS IN GUN			1093						
NO. OF BARREL			2						
ROUNDS IN BARREL			1093						
HEAD SPACE			--						
PIN PROTRUSION			--						
ROUNDS FIRED			50						
RDS. IN BURST OR CLIPS			50						
NO. OF BURSTS OR CLIPS			1						
GUNNER			Robinson						

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

Primer leaks (gas eroded heads)			10																
PRIMER LEAKS			28																
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES							numerous												
BREECH SPARKS							numerous												
AMM. FUNCTION			#																

REMARKS: Hot Firing:

* 2 stoppages: 1 loose primer (permissible) with blow back of metal and gas
eroded head

1 blown primer with gas eroded head

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AC
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
GM CAL. 60 T17E5
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER Seixas

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: WC 846
Charge: 45.8
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 12-A-1
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE						
			T-44				
NO. OF GUN			1491				
ROUNDS IN GUN			3040				
NO. OF BARREL			1				
ROUNDS IN BARREL			3040				
HEAD SPACE			2.186"				
PIN PROTRUSION			.055"				
ROUNDS FIRED			60				
RDS. IN BURST OR CLIPS			20				
NO. OF BURSTS OR CLIPS			3				
GUNNER			Robinson				

GUN FUNCTION

GROUP (MS)																	
ZERO (MS)																	

Primer leaks (gas eroded heads)

DEFECTS

PRIMER LEAKS			24						
PRIMER PERFORATIONS									
LOOSE PRIMERS									
CASE SPLITS									
RUPTURE									
STRETCHES									
GAS FLASHES									
BREECH FLAMES			numerous						
BREECH SPARKS			numerous						
AMM. FUNCTION			*						

REMARKS: Hot Firing:

* 10 stoppages: 3 stoppages - primer leaks with gas eroded head and complete rim shears

1 stoppage - loose primer (permissible) with blow back of metal and gas eroded heads

2 stoppages - blown primers with gas eroded heads and partial rim shear

1 stoppage - blown primer with gas eroded head and complete rim shear

3 stoppages - blown primers with gas eroded heads

GM CAL. 30, B. M1917A1

R.U.S. CAL. 30 M1903A3

GM CAL. 50 M3 AG

GM CAL. 30, B. A. G.

PISTOL AUTO CAL. 45 M1911A1

GM CAL. 60 T17E5

GM CAL. 30, B. M1919A4

GSM CAL. 45 M3-M3A1

GM CAL. 60 T59

GM CAL. 30, B. M1919A6

GM CAL. 22 M3-M4

GA CAL. 60/20 MK 12

R.A. CAL. 30, B. M1918A2

GM CAL. 50, B. M2 AG

GA 20 MM M3

R.U.S. CAL. 30 M1

GM CAL. 50, B. M2 HB

GA 20MM M24A1

RECORDER Seixas

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: HRS 5232.99
Charge: 39.5
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT: 12-A-2
AMM'N. LOT 7.62mm
CALIBER Ball
BULLET Aluminum
CARTRIDGE P.A.
MFG. P.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-44	T-52
NO. OF GUN		1491	10
ROUNDS IN GUN		3110	1125
NO. OF BARREL		1	2
ROUNDS IN BARREL		3110	1125
HEAD SPACE		2.186"	--
PIN PROTRUSION		.055"	--
ROUNDS FIRED		60	32
RDS. IN BURST OR CLIPS		20	32
NO. OF BURSTS OR CLIPS		3	1
GUNNER		Robinson	Robinson

GUN FUNCTION

GROUP (MS)															
ZERO (MS)															

DEFECTS

Primer leaks(gas eroded heads)			9
PRIMER LEAKS		12	15
PRIMER PERFORATIONS			
LOOSE PRIMERS			
GASE SPLITS			
RUPTURE			
STRETCHES			
GAS FLASHES			
BREECH FLAMES		numerous	numerous
BREECH SPARKS		numerous	numerous
AMM. FUNCTION			*

REMARKS: Hot Firing:

* 1 stoppage: blown primer with gas eroded head

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AC
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
GM CAL. 60 T17E5
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER Sixers

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: WC 846
Charges: 45.8
Primer: Rem#39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 12-B-1
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-44	T-52
NO. OF GUN		1491	10
ROUNDS IN GUN		3170	1160
NO. OF BARREL		1	2
ROUNDS IN BARREL		3170	1160
WEAR SPACE B.S.		2.186"	--
PIN PROTRUSION		.055"	--
ROUNDS FIRED		60	35
RDS IN BURST OR CLIPS		20	35
NO. OF BURSTS OR CLIPS		3	1
GUNNER		Robinson	Robinson

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

Primer leak (gas eroded head)	3																		
PRIMER LEAKS		25								26									
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
EXCESS blown primer (gas eroded head)										2									
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES			numerous							numerous									
BREECH SPARKS			numerous							numerous									
AMM. FUNCTION			*							*									

REMARKS: Hot Firings

* 1 stoppages - 3 loose primers (permissible) with blow back of metal & gas eroded heads
1 blown primer with gas eroded head

** 2 stoppages - 2 blown primers

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 M1

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AC
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AC
GM CAL. 60 T17E3
GM CAL. 60 T59
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

RECORDER Seixas

W.O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: HES 5232.99
 Charge: 39.5 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
 AMM'N. LOT 12-B-2
 CALIBER 7.62mm
 BULLET Ball
 CARTRIDGE Aluminum
 MFG. F.A.

GUN DATA

TYPE OF GUN	HANGFIRE								
		T-44					T-52		
NO. OF GUN		1491					10		
ROUNDS IN GUN		3230					1207		
NO. OF BARREL		1					2		
ROUNDS IN BARREL		3230					1207		
XXXX SPACE B.S.		2.186"					--		
PIN PROTRUSION		.055"					--		
ROUNDS FIRED		60					47		
RDS. IN BURST OR GLIPS		20					47		
NO. OF BURSTS OR GLIPS		3					1		
GUNNER		Robinson					Robinson		

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

PRIMER LEAKS								19											
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES																numerous			
BREECH SPARKS																			
AMM. FUNCTION						OK													

REMARKS: Hot Firing:

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AC
 GM CAL. 50, B. M2 HB

GM CAL. 30 M3 AC
 GM CAL. 60 T1E5
 GM CAL. 60 T39
 GA CAL. 60/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

RECORDER: Seixas

W.O. 83805-10-0a DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Werst

Powder: WC 846
 Charge: 45.8 grs
 Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
 AMM'N. LOT 12-B-3
 CALIBER 7.62mm
 BULLET Ball
 CARTRIDGE Aluminum
 MFG. P.A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-44					T-52		
NO. OF GUN		1491					10		
ROUNDS IN GUN		3290					1247		
NO. OF BARREL		1					2		
ROUNDS IN BARREL		3290					1247		
HEAD SPACE B.S.		2.186"					--		
PIN PROTRUSION		.055"					--		
ROUNDS FIRED		60					40		
RDS. IN BURST OR CLIPS		20					40		
NO. OF BURSTS OR CLIPS		3					1		
GUNNER		Robinson					Robinson		

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS

Primer leaks (gas eroded head)	10																		
PRIMER LEAKS	49																		
PRIMER PERFORATIONS																			
LOOSE PRIMERS																			
CASE SPLITS																			
RUPTURE																			
STRETCHES																			
GAS FLASHES																			
BREECH FLAMES		numerous																	
BREECH SPARKS		numerous																	
AMM. FUNCTION		*																	

REMARKS: Hot Firing:

* 1 stoppage: loose primer (permissible) with blow back of metal

** 8 stoppages: blown primers

GM CAL. 30, B. M1917A1
 GM CAL. 30, B. A. C.
 GM CAL. 30, B. M1919A4
 GM CAL. 30, B. M1919A6
 R.A. CAL. 30, B. M1918A2
 R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
 PISTOL AUTO CAL. 45 M1911A1
 GSM CAL. 45 M3-M3A1
 GM CAL. 22 M3-M4
 GM CAL. 50, B. M2 AG
 GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG
 GM CAL. 60 T1E5
 GM CAL. 60 T59
 GA CAL. 80/20 MK 12
 GA 20 MM M3
 GA 20 MM M24A1

RECORDER Seixas

N. O. 83805-10-01 DATE FIRED 18 Mar 58

FOREMAN

CHIEF BALLISTICIAN John P. Worst

Powder: WC 846
Charge: 45.8 grs
Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N. LOT 12-C-1
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F. A.

GUN DATA

TYPE OF GUN	HANGFIRE	T-44	T-52
NO. OF GUN		1491	10
ROUNDS IN GUN		3350	1267
NO. OF BARREL		1	2
ROUNDS IN BARREL		3350	1267
WEAPONS PAGE B.S.		2.186"	--
PIN PROTRUSION		.055"	--
ROUNDS FIRED		60	20
RDS. IN BURST OR CLIPS		20	20
NO. OF BURSTS OR CLIPS		3	1
GUNNER		Robinson	Robinson

GUN FUNCTION

GROUP (MS)															
ZERO (MS)															

DEFECTS

PRIMER LEAKS		39	11
PRIMER PERFORATIONS			
LOOSE PRIMERS			
CASE SPLITS			
RUPTURE			
STRETCHES			
GAS FLASHES			
BREECH FLAMES		numerous	numerous
BREECH SPARKS		numerous	numerous
AMM. FUNCTION		*	**

REMARKS: Hot Firing:
* 7 stoppages: 2 loose primer (permissible) with blow back of metal & K ruptures
4 primer leaks with complete rim shears
1 blown primer with gas eroded head
** 2 stoppages: 1 blown primer with gas eroded head
1 blown primer with a complete rim shear and gas eroded head

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AG
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T1E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AG	GA 20MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER: Selvas		W.O. 83805-10-01 DATE FIRED 18 Mar 58
FOREMAN	CHIEF BALLISTICIAN	John P. Werst

PRIMER LOT _____
 AMM'N. LOT 12-C-2
 CALIBER 7.62mm
 BULLET Ball
 CARTRIDGE Aluminum
 MFG. F.A.

POWDER <u>HES5232-99</u>		FRANKFORD ARSENAL PROOF TESTING SECTION		AMM. LOT.	
ARMY LOT		VELOCITY & PRESSURE REPORT		12A, B, C.	
CHARGE <u>39.3</u>		OBJECT: <u>Verify Test</u>		CALIBER <u>7.62mm</u>	
CASE <u>Aluminum</u>		R & DP <u>7-56</u>		BULLET <u>Ball M59</u>	
PRIMER <u>Rem #39</u>		SPEC:		REF. RDS. <u>8-55</u>	
REG. NO. <u>F/A Universal #28</u>		BRL. NO. <u>R57</u>		CTG. AP Cal 30, M61	
REG. NO.		BRL. NO. <u>R64</u>		A.L. <u>40633</u> CHG. <u>45.6</u>	
REG. NO.		BRL. NO. <u>G78</u>		C- <u>445</u> , B- <u>446</u> , Pwd "S"	
REG. NO.		BRL. NO. <u>G78</u>		V.V. <u>2748</u> F/S (2700 SP)	
REG. NO.		BRL. NO. <u>G78</u>		P. V. <u>45400</u> psi	

R57			R64			G78		
Ref	Lot		Ref	Lot		Ref	Lot	
1. 2744	2800	✓	2745	2757		2662	42100	-
2. 2735	2779	-	2720	2809	✓	2649	42400	-
3. 2739	2770		2753	2746	-	2661	43600	
4. 2764	2787	✓	2758	2797		2677	44400	✓
5. 2743	2773		2762	2804	✓	2660	42100	✓
6. 2748	2762		2756	2804		Total	13309	211600
7. 2741	2770		2744	2798		Mean	2662	42900
8. 2762	2750	-	2758	2747		Exv	28	2300
9. 2760	2753		2746	2752				
10. 2742	2775		2748	2771				
11.						Lot		
						-*	2658	43900
12. 27478	Total	27719	27490	27785		*	2671	41100
13. 2748	Mean	2772	2749	2779		*	2668	44900
14.	Cor	40	-	-1		✓*	2687	46600
15.	Cor'd	2772		2778		*	2672	44700
16. 29	Exv	50	42	63				
17.	SB	14		25		Total	13356	221200
18.						Mean	2673	44200
19.						Cor	438	42500
20.						Cor'd	2709	46700
						Exv	29	5500

REMARKS:

Rds not alternated

Range No. 10

Counter No. 4

Muzzle #88

Terminal #63

* Loose primers - possibly attributable to scotch tape

CASES & PRIMERS	CHRONOGRAPH OR	Holden	W.O.	51702-02-10
DATE FIRED	GUNNER	Matelki	CHIEF BALLISTICIAN	
ORDBA FORM SP 931 REV MAR 51	FOREMAN	H.A. Fals		

1 AMM. LOT.

12A. B. C

CALIBER 7.62mm

BULLET Ball M59

R & DP-7-56

SPEC:

REF. RDS. 8-55

CTG, AP M61

REC. NO.

BRL. NO.

TREF.

A.L. 40633

CHG. 456

REC. NO. F/A Universal #29

BRL. NO. R57

TRFD, 1195

C-1445, B-1446 Pwd

REC. NO.

DRL NO. G74

TRFD, 1258

V.V. 271.8 F/S (2700 SP)

REC. NO.

BRL NO.

TRFD.

P. V. 45400 psi

39.3 grs

Drilled

	Ref		Lot		Ref		Lot	
1.	2729		2729		2684	43800	2612	40600
2.	2732	+	2698		2687	45100	2589	38000
3.	2707	-	2730		2685	42800	2599	40000
4.	2712		2737		2670	42800	2644	45000
5.	2709		2731		2690	44200	2665	44700
6.			2675	-				
7.			2744		13416	218700	Total	13109
8.			2737		2683	43700	Mean	2622
9.			2732				Cor	417
10.			2750	+			Cor'd	2639
11.					20	2300	Exv	76
12.	13589	Total	27263					7000
13.	2718	Mean	2726					
14.		Cor	430					
15.		Cor'd	2756					
16.	25	Exv	75					
17.		SD	21					
18.								
19.								
20.								

REMARKS: * Loose primers

Ref Rds not alternated

Range No. 1

Counter No. 1

CASES & PRIMERS

CHRONOGRAPH OR Holden

W. O. 73808-02-11

CASES & PRIMERS

GUNNER Matecki

CHIEF BALLISTICIAN

DATE FIRED 2/19/58

FOREMAN H. A. Gale

ORDBA FORM SP 931 REV MAR 51

ARMY-NAVY ARSENAL (NMP), METUCHEN, NJ-10-234

Primer: Rem #39

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT _____
 AMM'N. LOT _____
 CALIBER 7.62mm
 BULLET Ball, M59
 CARTRIDGE Aluminum
 MFG. _____

LOT		13A4	13B3	GUN DATA				13B4	13B7	13B8	13C2
TYPE OF GUN	HANGFIRE	T-65	T-65		T-65	T-65	T-65	T-65	T-65	T-65	
NO. OF GUN		472701	472701		472701	472701	472701	472701	472701	472701	
ROUNDS IN GUN		10539	10437		10627	10876	10774	10686			
NO. OF BARREL		B-5	B-5		B-5	B-5	B-5	B-5	B-5	B-5	
ROUNDS IN BARREL		5439	5337		5527	5776	5674	5586			
HEAD SPACE		2.188"	2.183"		2.188"	2.182"	2.188"	2.188"	2.188"	2.188"	
PIN PROTRUSION		.064"	.064"		.064"	.064"	.064"	.064"	.064"	.064"	
ROUNDS FIRED		102	87		88	102	88	59			
RDS. IN BURST OR GLIPS		102	87		88	102	88	59			
NO. OF BURSTS OR GLIPS		1	1		1	1	1	1			
GUNNER		REYNOLDS	REYNOLDS		REYNOLDS	REYNOLDS	REYNOLDS	REYNOLDS	REYNOLDS	REYNOLDS	

[illegible]

Gas Eroded Head	3	15	10	9	8	17
<u>PRIMER LEAKS</u>	41(1) 26-8	12-1 10-8	8-1 5-8	5-1 10-8	5-1 8-8	4-1 7-8
<u>PRIMER PERFORATIONS</u>						
<u>LOOSE PRIMERS Blown</u> (Non-Permissible)		2 (Non-Permissible)		1		3
<u>CASE SPLITS</u>						
<u>RUPTURE</u>						
<u>STRETCHES</u>						
<u>GAS FLASHES</u>						
<u>BREECH FLAMES</u>						
<u>BREECH SPARKS</u>						
<u>AMM. FUNCTION</u>	*	**	***		****	*****

REMARKS: Fired +165°

* 2 Stoppages: short recoil

** 13 " " "

*** 7 " " "

*****14 " " "

*****9 " " "

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL.30 M1903A3
PISTOL AUTO CAL.45 M1911A1
GSM CAL.45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..30, B. M2 AC
GM CAL..30, B. M2 HB

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER SETXAS & KING

W. 051702-02-11 DATE FIRED 2 Jun 50

RECORDED _____
FOREMAN A. H. CHIEF BALLISTICIAN

ARMY-NARITAN ARSENAL (NMPC), METUCHEN, NJ 50-307

ORDBA FORM SP-2 MAR 52 (FORMERLY ORDBA 675 WHICH IS OBSOLETE)

POWDER <u>WC 846</u>	FRANKFORD ARSENAL PROOF TESTING SECTION	AMM. LOT. <u>13 & 14</u>
ARMY LOT _____		CALIBER <u>7.62mm</u>
CHARGE _____		BULLET <u>Ball M59</u>
CASE <u>Aluminum</u>		
OBJECT: <u>Verify Charge</u> <u>as per R & D 7-56</u>		

PRIMER _____	SPEC: _____	REF. RDS. <u>7-57</u>
REG. NO. _____	BRL. NO. _____	CTG. <u>7.62mm NATO</u>
REG. NO. <u>F/A Universal No. 12</u>	BRL. NO. <u>G-85</u>	A.L. <u>140633</u> CHG. <u>145.7</u> grs
REG. NO. _____	BRL. NO. _____	C- <u>137</u> , R- <u>136</u> Pwd <u>RFM</u>
REG. NO. _____	BRL. NO. _____	V.V. <u>2718</u> F/S, <u>2705</u> F/S <u>MSP</u>
REG. NO. _____	BRL. NO. _____	P.V. <u>15900</u> psi

	Ref				13-C1				14-A1				14-A2			
1.	2690	14500			2695	14500-			2681	14700			2660	14700-		
2.	2680	14300-			2709	14000			2657	14200			2672	14600		
3.	2720	143900			2720	145100			2643	141500			2677	141500		
4.	2675	141600			2705	143900			2682	142100			2671	143100		
5.	2691	143900			2726	143000			2678	143100			2685	142300		
6.	13456	220200	Total		13555	220100			13314	271100			13368	276500		
7.	2691	14000	Mean		2711	14000			2669	142800			2671	143300		
8.			V&P Cor		414	41900			414	41900			414	41900		
9.			Cor'd		2725	145900			2683	144700			2688	145200		
10.	145	1300	Ex Var		31	1600			141	3200			25	2900		
11.																
12.																
13.																
14.									WTS							
15.						13-C-1			14-A-1				14-A-2			
16.						146.16-			145.76				145.78			
17.						146.254			145.76				145.82			
18.						146.22			145.76				145.814			
19.						146.23			145.814				145.77			
20.						146.22			145.75				145.82			
						231.08	Total		228.87				229.03			
						146.22	Mean		145.77				145.81			
						.09	Ex Var		.09				.07			

REMARKS:

Primer	Charge	
Lot 13-C-1 Rem 72	146.2 grs	Chrono No. 1
Lot 14-A-1 Rem 39	145.8 grs reg size vents	Range No. 9
Lot 14-A-2 Rem 39	145.8 grs large size vents	

CASES & PRIMERS <u>OK</u>	CHRONOGRAPH OR <u>Allen</u>	W.O. <u>83805-10-01</u>
DATE FIRED <u>28 Apr 58</u>	GUNNER <u>Iachman</u>	
ORDBA FORM SP 931 REV MAR 51	FOREMAN <u>HAF</u>	CHIEF BALLISTICIAN

ARMY-NANTAN ARSENAL (NAPC), NEWTOWN, NJ-08-514

Powder: SC 846	FRANKFORD ARSENAL PROOF HOUSE	PRIMER LOT 13 and 14
Charge: 45.8 grs	FUNCTION AND CASUALTY TEST	AMM'N. LOT
Primer: Rem #39	R & D 7-56	GALIBER 7.62mm
	AUTOMATIC & SEMI-AUTOMATIC WEAPONS	BULLET Ball
		CARTRIDGE Aluminum
		MFG. F.A.

LOT		13A-1	GUN DATA		13A-2	13A-3	14A-1	14A-2
TYPE OF GUN	HANGFIRE	T-44			T-44	T-44	T-44	T-44
NO. OF GUN		1491			1491	1491	1491	1491
ROUNDS IN GUN		5427			5564	5668	5465	5332
NO. OF BARREL		1			1	1	1	1
ROUNDS IN BARREL		5427			5564	5668	5465	5332
WEAP. SPACE B.S.		2.186"			2.186"	2.186"	2.186"	2.186"
PIN PROTRUSION		.052"			.052"	.052"	.052"	.052"
ROUNDS FIRED		95			99	104	38	55
RDS. IN BURST OR CLIPS		20 - 15			20 - 19	20 - 4	20 - 18	20 - 15
NO. OF BURSTS OR CLIPS		4 - 1			4 - 1	5 - 1	1 - 1	2 - 1
GUNNER		Robinson			Robinson	Robinson	Robinson	Robinson

GUN FUNCTION

[illegible]

DEFECTS

Primer Leaks (Eroded head)	6 - L	4	1
PRIMER LEAKS	29-L, 20-S	39-L, 21-S	10-L, 13-S
PRIMER PERFORATIONS			
LOOSE PRIMERS			
CASE SPLITS			
RUPTURE			
STRETCHES			
GAS FLASHES			
BREECH FLAMES			
BREECH SPARKS			
AMM FUNCTION			

REMARKS: Hot Firing #165°

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AC
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 43 M1911A1	GM CAL. 60 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AC	GA 20 MM M3
R.U.S. CAL. 30 MI	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER <u>Seixas</u>	W.O. <u>51702-02-11</u>	DATE FIRED <u>9 May 58</u>
FOREMAN _____	CHIEF BALLISTICIAN _____	

Powder: WC 846	FRANKFORD ARSENAL PROOF HOUSE FUNCTION AND CASUALTY TEST R & D 7 - 56 AUTOMATIC & SEMI-AUTOMATIC WEAPONS	PRIMER LOT <u>13</u>
Charge: 45.8 grs		AMM'N. LOT _____
Primer: Rem #39		CALIBER <u>7.62mm</u>
		BULLET <u>Ball</u>
		CARTRIDGE <u>aluminum</u>
		MFG. <u>F.A.</u>

LOT		GUN DATA					
		13B-1	13B-2	13B-5	13B-6		
TYPE OF GUN	HANGFIRE	T-44	T-44	T-44	T-44		
NO. OF GUN		1491	1491	1491	1491		
ROUNDS IN GUN		5829	5895	6075	5971		
NO. OF BARREL		1	1	1	1		
ROUNDS IN BARREL		5829	5895	6075	5971		
HEAD SPACE B.S.		2.186"	2.186"	2.186"	2.186"		
PIN PROTRUSION		.052"	.052"	.052"	.052"		
ROUNDS FIRED		105	76	104	66		
RDS. IN BURST OR CLIPS		20 - 5	20 - 16	20 - 4	20 - 6		
NO. OF BURSTS OR CLIPS		5 - 1	3 - 1	5 - 1	3 - 1		
GUNNER		Robinson	Robinson	Robinson	Robinson		

GUN FUNCTION									
GROUP (MS)									
ZERO (MS)									
Gas Eroded Head (Blown Primer)									
Primer Leaks (eroded heads)	29	DEFECTS				16	1	12	
PRIMER LEAKS	10-L, 10-S	10-L, 12-S	17-L, 12-S	14-L, 15-S					
PRIMER PERFORATIONS									
LOOSE PRIMERS									
CASE SPLITS									
RUPTURE									
STRETCHES									
GAS FLASHES									
BREECH FLAMES									
BREECH SPARKS									
AMM. FUNCTION									
REMARKS:	Hot Firing #165°								

GM CAL. 30, B. M1917A1	R.U.S. CAL. 30 M1903A3	GM CAL. 50 M3 AC
GM CAL. 30, B. A. C.	PISTOL AUTO CAL. 45 M1911A1	GM CAL. 60 T17E5
GM CAL. 30, B. M1919A4	GSM CAL. 45 M3-M3A1	GM CAL. 60 T59
GM CAL. 30, B. M1919A6	GM CAL. 22 M3-M4	GA CAL. 60/20 MK 12
R.A. CAL. 30, B. M1918A2	GM CAL. 50, B. M2 AC	GA 20 MM M3
R.U.S. CAL. 30 M1	GM CAL. 50, B. M2 HB	GA 20MM M24A1
RECORDER <u>Seixas</u>	W.O. <u>51702-02-11</u>	DATE FIRED <u>9 May 58</u>
FOREMAN _____	CHIEF BALLISTICIAN _____	

69

PRIMER Rem #72		REF. RDS. 2-58	
w/steel adapter		SPEC: CTG. Ball M59	
REG. NO.	BRL. NO.	TRFD.	A.L. 40633 CHG. 46.7
REG. NO. F.A. Universal #8	BRL. NO. R-69	TRFD. 1502	C-459, B-458, Pwd "2"
REG. NO.	BRL. NO.	TRFD.	V.V. 2758 F/S 2727 S/P
REG. NO. " " "	BRL. NO. G-85	TRFD. 1283	P.V. 44.500 psi

[illegible]

70

POWDER <u>Hes.</u>	FRANKFORD ARSENAL PROOF TESTING SECTION	AMM. LOT <u>15 A & B</u>
<u>5232,99</u>		
ARMY LOT <u></u>		CALIBER <u>7.62mm</u>
CHARGE <u>40.0 GRS</u>		BULLET <u>Ball M59</u>
CASE <u>Nato</u>	OBJECT: <u>Pressure Test</u>	
<u>Aluminum</u>	<u>R & D-7-56</u>	

PRIMER <u>Rem #72</u>	REF. RDS. <u>2-58</u>
<u>steel adapter type</u>	CTG. <u>Ball M59 Nato</u>
SPEC <u></u>	A.L. <u>40633</u> CHG. <u>46.7 GRS</u>
REG. NO. <u></u>	BRL. NO. <u>G-109</u> TRFD. <u>305</u>
REG. NO. <u>F. A. Universal 22</u>	V.V. <u>2727 F/S</u>
REG. NO. <u></u>	P.V. <u>44,500 PSI</u>

Normal									
Ref. Rds.				A		B			
1.	2711	45100		2710	44700	2685	42100		
2.	2717	45200		2693	42900	-2673	41400		
3.	2734	44500		2667	42800	2678	40800		
4.	2718	46400		2714	44700	2682	41700		
5.	-2701	43600		-2666	41500	2696	41800		
6.	13581	224800	Total	13450	216600	13414	207800		
7.	2716	45000	Mean	2690	43300	2683	41600		
8.			Cor.	211	-500	211	-500		
9.			Cor. M.	2701	42800	2694	41100		
10.	33	2800	Ex. V.	48	3200	23	1300		
11.									
12.						Hot			
13.				A		B			
14.				2708	43800	2740	45100		
15.				2721	44200	2728	42300		
16.				2733	46300	2755	44800		
17.				2732	46100	-2695	40800		
18.				-2694	43200	2713	44500		
19.			Total	13588	223600	13631	217500		
20.			Mean	2718	44700	2726	43500		
			Cor.	211	-500	211	-500		
			Cor. M.	2729	44200	2737	43000		
			Ex. V.	39	3100	60	4300		

REMARKS:

Range 9

Chrono. 4

CASES & PRIMERS <u>ok</u>	CHRONOGRAPH OR <u>Sanderson</u>	W.O. <u>51702-02-11</u>
DATE FIRED <u>8-27-58</u>	GUNNER <u>McFadden</u>	
ORDBA FORM SP 931 REV MAR 51	FOREMAN <u>JTG</u>	CHIEF BALLISTICIAN

72

with steel adapter

R & D 7-56

AUTOMATIC & SEMI-AUTOMATIC WEAPONS

CANTABRIDGE MASSACHUSETTS
MFC F A

Mr G. _____

470°F

4165°F

TYPE OF GUN	HANGFIRE	T-65	T-65
NO. OF GUN		472701	472701
ROUNDS IN GUN		23955	23822
NO. OF BARREL		B-18	B-18
ROUNDS IN BARREL		2079	1946
NO. SPAGE B.S.		2.184"	2.184"
PIN PROTRUSION		.064"	.064"
ROUNDS FIRED		46	46
RDS. IN BURST OR CLIPS		46	46
NO. OF BURSTS OR CLIPS		1	1
GUNNER		Williams	Williams

[illegible]

PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE							
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK			OK		

REMARKS: Enlarged vent hole .1093

FOREMAN

R.U.S. CAL.30 M1903A3
PISTOL AUTO CAL..45 M1911A1
GSM CAL..45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..50, B. M2 AC
GM CAL..50, B. M2 HB

GM CAL. .50 M3 AC
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20 MM M24A1

W. O. 51702-02-10 DATE FIRED 29 Aug 58

CHIEF BALLISTICIAN

Primer: Rem #72
with steel adapter

FRANKFORD ARSENAL PROOF HOUSE

FUNCTION AND CASUALTY TEST

R & D 7-56

AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT Rejects
AMM N. LOT 16-T
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

165°F		Cut Head	Tri-GUN DATA	High Primer	Low Primer	Thick Head
TYPE OF GUN	HANGFIRE	T-65	T-65	T-65	T-65	T-65
NO. OF GUN		472701	472701	472701	472701	472701
ROUNDS IN GUN		27297	27317	27332	27375	27349
NO. OF BARREL		28	28	28	28	28
ROUNDS IN BARREL		3836	3856	3871	3874	3888
HEAD SPACE B.S.		2.183"	2.183"	2.183"	2.183"	2.183"
PIN PROTRUSION		.067"	.067"	.067"	.067"	.067"
ROUNDS FIRED		19	11	15	3	14
RDS. IN BURST OR GLIPS		19	11	15	3	14
NO. OF BURSTS OR GLIPS		1	1	1	1	1
GUNNER		Gambino	Gambino	Gambino	Gambino	Gambino

GUN FUNCTION

[illegible]

DEFECTS

PRIMER LEAKS								
PRIMER PERFORATIONS								
LOOSE PRIMERS								
CASE SPLITS								
RUPTURE								
STRETCHES								
GAS FLASHES								
BREECH FLAMES								
BREECH SPARKS								
AMM. FUNCTION		OK	OK		OK	OK		OK

REMARKS:

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. GAL. 30, B. M1918A2
R.U.S. GAL. 30 MI

RECORDER Seixas

FOREMAN

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AC
GM CAL. 50, B. M2 HB

GM GAL. .50, B. M2 HB

GM CAL. .50 M3 AC
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

W. O. 83805-10-01 DATE FIRED 20 Oct 58

CHIEF BALLISTICIAN

with steel adapter

R & D 7-56

PRIMER LOT rejects
AMM'N. LOT 16-T
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

165°F	Large Head Dia.	GUN DATA			Bad Profile	Short Length	Long Head to shoulder	
TYPE OF GUN	HANGFIRE	T-65			T-65	T-65		T-65
NO. OF GUN		472701			472701	472701		472701
ROUNDS IN GUN		27306			27305	27355		27278
NO. OF BARREL		28			28	28		28
ROUNDS IN BARREL		3845			3844	3894		3818
HEAD SPACE B.S.		2.183"			2.183"	2.183"		2.183"
PIN PROTRUSION		.067"			.067"	.067"		.064"
ROUNDS FIRED		1			8	6		7
RDS. IN BURST OR CLIPS		1			8	6		7
NO. OF BURSTS OR CLIPS		1			1	1		1
GUNNER		Gambino			Gambino	Gambino		Gambino

[illegible]

PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE Complete							1-SJ
STRETCHES							1
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK			OK	OK	*

REMARKS:

* 1 stoppage due to complete rupture

GM CAL. .50 M3 AG
GM CAL. .50 T17E5
GM CAL. .50 T59
GA CAL. .50/20 MK 12
GA 20 MM M3
GA 20MM M24A1

W. O. 83805-10-01 DATE FIRED 20 Oct 58

CHIEF BALLISTICIAN

ORDBA FORM SP-2 MAR 52 (FORMERLY ORDBA 675 WHICH IS OBSOLETE)

ARMY BARITAM ARSENAL (BARO) METUCHEN, M. 51, 1302

Powder: HBS 5232.99
Charge: 40.0
Primer: Rem #72
with steel adapter

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R & D 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT
AMM'N LOT 16-T
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

TYPE OF GUN	HANGFIRE	GUN DATA							
		470°F				465°F	465°F		-40°F
		T-65				T-65	T-65		T-65
NO. OF GUN		472701				472701	472701		472701
ROUNDS IN GUN		25795				26325	26365		26805
NO. OF BARREL		B-18				B-18	28		28
ROUNDS IN BARREL		3919				4449	2865		3345
HEAD SPACE		2.184"				2.184"	2.183"		2.183"
PIN PROTRUSION		.064"				.064"	.064"		.064"
ROUNDS FIRED		240				200	40		240
RDS. IN BURST OR CLIPS		100 - 40				100	40		100 - 40
NO. OF BURSTS OR CLIPS		2 - 1				2	1		2 - 1
GUNNER		Baker				Baker	Paker		Baker

GUN FUNCTION

GROUP (MS)																			
ZERO (MS)																			

DEFECTS										4(k)	
Burn Through											
PRIMER LEAKS											
PRIMER PERFORATIONS											
LOOSE PRIMERS											
CASE SPLITS		1-8									
RUPTURE Complete Rim Shear						8					
STOPPAGE Partial Rupture											1 (J)
GAS FLASHES											
BREECH FLAMES											
BREECH SPARKS											
AMM. FUNCTION						*	OK				
REMARKS:											

* 8 stoppages due to rim shears - changed barrel after the burn through appeared

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. G.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AG
GM CAL. 50, B. M2 HB

GM CAL. 50 M3 AG
GM CAL. 60 T1E5
GM CAL. 60 T39
GA CAL. 60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER Sanger - Seixas

W.O. 83805-10-01 DATE FIRED 20 Oct 58

FOREMAN

CHIEF BALLISTICIAN

Primer: Rem #72
with steel adapter

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R & D 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT reject
AMM'N. LOT 16-T-P
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

165°F		Thick heads	GUN DATA		High Primer	Trip Ups	Long Head to shoulder	
TYPE OF GUN	HANGFIRE	T-65			T-65	T-65		T-65
NO. OF GUN		472701			472701	472701		472701
ROUNDS IN GUN		27247			27218	27213		27209
NO. OF BARREL		28			28	28		28
ROUNDS IN BARREL		3786			3758	3753		3749
HEAD SPACE		2.183"			2.183"	2.183"		2.183"
PIN PROTRUSION		.064"			.064"	.064"		.064"
ROUNDS FIRED		12			5	2		4
RDS. IN BURST OR CLIPS		12			5	2		4
NO. OF BURSTS OR CLIPS		1			1	1		1
GUNNER		Gambino			Gambino	Gambino		Gambino

GUN FUNCTION

[illegible]

DEFECTS

PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE							
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK		OK		OK	OK

REMARKS:

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 MI

RECORDER Seixas

FOREMAN.

R.U.S. CAL. 30 M1903A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A;
GM CAL. 22 M3-M4
GM CAL. 30, B. M2 AG
GM CAL. 30, B. M2 HB

N.O. 83805-10-01 DATE FIRED 20 Oct 58

-CHIEF BALLISTICIAN

GM CAL. .50 M3 AC
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

PRIMER LOT _____
AMM'N. LOT 16-T-R
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

ARMY-BARITAN ARSENAL(RAPD), METUCHEN, NJ-08-1705

Primer: Rem #72
with steel adapter

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R & D 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT rejects
AMM N. LOT 16-0
CALIBER 7.62mm
BULLET Ball
CARTRIDGE Aluminum
MFG. F.A.

[illegible][illegible]

PRIMER LEAKS							
PRIMER PERFORATIONS							
LOOSE PRIMERS							
CASE SPLITS							
RUPTURE						1 - SJ	1 - SJ
STRETCHES							
GAS FLASHES							
BREECH FLAMES							
BREECH SPARKS							
AMM. FUNCTION		OK	OK	OK	OK		OK

REMARKS:

R.U.S. CAL.30 M1903A3
PISTOL AUTO CAL. .45 M1911A1
GSM CAL. .45 M3-M3A1
GM CAL..22 M3-M4
GM CAL..50, B. M2 AC
GM CAL..50, B. M2 HB

GM CAL. .50 M3 AC
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

W.O. 83805-10-01 DATE FIRED 20 Oct 58

FOREMAN

CHIEF BALLISTICIAN

Powder: <u>WES 5232.99</u>	FRANKFORD ARSENAL PROOF HOUSE FUNCTION AND CASUALTY TEST R & D 7-56 AUTOMATIC & SEMI-AUTOMATIC WEAPONS	PRIMER LOT _____
Charge: <u>40.0</u>		AMM'N. LOT <u>16-0</u>
Primer: <u>Rem #72</u>		CALIBER <u>7.62mm</u>
with steel adapter		BULLET <u>Ball</u>
		CARTRIDGE <u>Aluminum</u>
		MFG. _____

		GUN DATA			
		170°T		165°T	170°T
TYPE OF GUN	HANGFIRE	T-65		T-65	T-114
NO. OF GUN		472701		472701	11491
ROUNDS IN GUN		26085		26525	11502
NO. OF BARREL		P-18		28	1
ROUNDS IN BARREL		4209		3065	11502
HEAD SPACE		2.184"		2.183"	2.186"
PIN PROTRUSION		.064"		.064"	.057"
ROUNDS FIRED		240		240	280
RDS. IN BURST OR CLIPS		100 - 40		100 - 40	20
NO. OF BURSTS OR CLIPS		2 - 1		2 - 1	11
GUNNER		E. ker		Baker	Gambino

GUN FUNCTION

[illegible]

DEFECTS

Flow Back of Metal in Primer Pocket		DEFECTS		90%	
PRIMER CRACKS					
PRIMER PERFORATIONS					
LOOSE PRIMERS					
CASE SPLITS					
PRIMER Complete Rim Shear	3				
STRETCHES					
GAS FLASHES					
BREECH FLAMES					
BREECH SPARKS					
AMM. FUNCTION	*			OK	

REMARKS:

* 3 stoppages: rim shears

GM CAL. 30, B. M1917A1
GM CAL. 30, B. A. C.
GM CAL. 30, B. M1919A4
GM CAL. 30, B. M1919A6
R.A. CAL. 30, B. M1918A2
R.U.S. CAL. 30 NI

R.V.S. CAL. 30 M19Q3A3
PISTOL AUTO CAL. 45 M1911A1
GSM CAL. 45 M3-M3A1
GM CAL. 22 M3-M4
GM CAL. 50, B. M2 AG
GM CAL. 50, B. M2 HB

GM CAL. .50 M3 AG
GM CAL. .60 T17E5
GM CAL. .60 T59
GA CAL. .60/20 MK 12
GA 20 MM M3
GA 20MM M24A1

RECORDER Sanger - Seixas

W.O. 83805-10-01 DATE FIRED 20 Oct 58

FOREMAN-

CHIEF BALLISTICIAN

ORDBA FORM SP-2 MAR 52 (FORMERLY ORDBA 675 WHICH IS OBSOLETE)

ARMY-NARITAN ARSENAL (RAPD), METUCHEN, NJ 52-1705

with steel adapter

FRANKFORD ARSENAL PROOF HOUSE
FUNCTION AND CASUALTY TEST
R&D 7-56
AUTOMATIC & SEMI-AUTOMATIC WEAPONS

PRIMER LOT	
AMM'N. LOT	16 T-O
CALIBER	7.62mm
BULLET	Ball
CARTRIDGE	Alum
MFG.	FA

165°F

Large Head
Diameter

GUN DATA

TYPE OF GUN	HANGFIRE	T65					
NO. OF GUN		472701					
ROUNDS IN GUN		27873					
NO. OF BARREL		28					
ROUNDS IN BARREL		4412					
XXX SPACE B.S.		2.183"					
PIN PROTRUSION		.064"					
ROUNDS FIRED		418					
ROS. IN BURST OR CLIPS		100 - 18					
NO. OF BURSTS OR CLIPS		4 - 1					
GUNNER		Ganbino					

GUN FUNCTION

[illegible]

DEFECTS

[illegible]

REMARKS:

GM CAL. 30, B. M1917A1

GM CAL. 30, B. A. C.

GM CAL. 30, B. M1919A4

GM CAL. 30, B. M1919A6

R.A. CAL..30,B. M1918A2

R. U. S. CAL. 30 MI

RECORDED Seixas

FOREMAN

R.U.S. CAL..30 M1903A3

PISTOL AUTO CAL. .45 M1911A1

GSM GAL. 45 M3-M3A1

GM CAL..22 M3-M4

GM CAL., 50, B. M2 AC

GM CAL. 50, B. M2 HB

GM CAL. .50 M3 AC

GM CAL. 60 T17E5

GM CAL. .60 T59

GA CAL. 60/20 MK 12

64 20 MM M3

GA 20MM M24A1

W.D. 83805-10-01 DATE FIRED 20 Oct 58

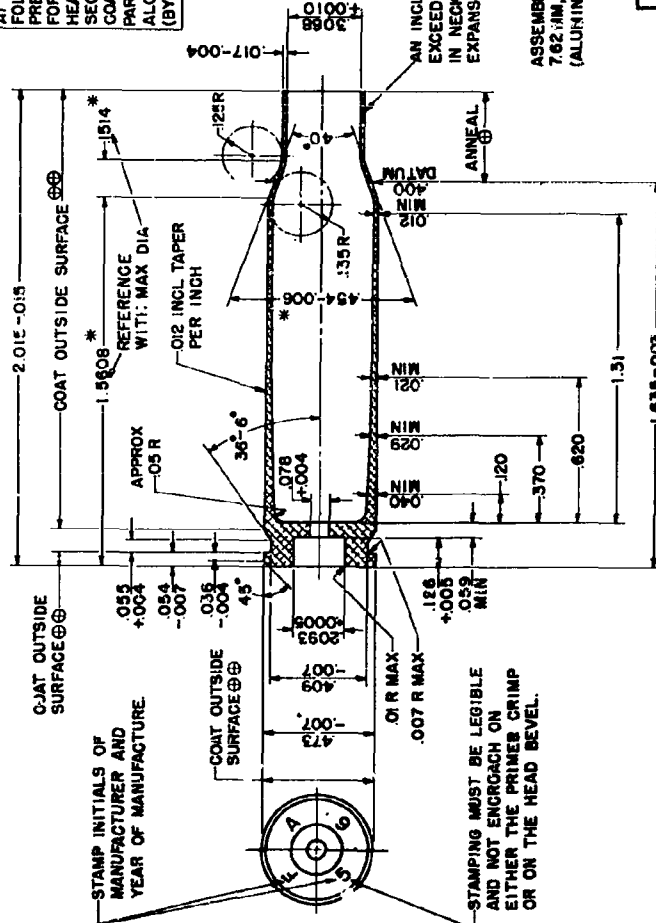
CHIEF BALLISTICIAN.

Figure C-1

HEAT TREATMENT AND FINAL FINISH

HEAT TO 880°F, HOLD FOR 30 MIN THEN QUENCH IN WATER AT ROOM TEMPERATURE. AGE AT 250°F FOR 3 HOURS FOLLOWED BY 325°F FOR 23 HOURS. COOL IN AIR. PRETREATMENT AND FINISH NO. H3.04, SPEC MIL-P-12011, FOR ALL SURFACES, INSIDE AND OUTSIDE.

HEAT NECK TO 600°F DEPTH IN SALT BATH AT 700°F FOR 8 SECONDS, THEN QUENCH IN WATER AT ROOM TEMPERATURE. COAT OUTSIDE SURFACE 60 WITH A MIXTURE OF ONE PART CONCENTRATED DISPERSION OF GRAPHITE IN ALCOHOL IN 10 PARTS DENATURED ETHYL ALCOHOL (BY VOLUME).



ASSEMBLED AS CARTRIDGE,
7.62MM, BALL, T104-E2
(ALUMINUM CASE)

NOTICE:- THIS DRAWING SHALL NOT BE LOANED
OR REPRODUCED EITHER WHOLLY OR IN PART
EXCEPT UNDER AUTHORITY OF CONNECTION WITH
UNITED STATES GOVERNMENT PROCUREMENT.

REVISIONS	CASE, CARTRIDGE, 7.62MM, FA T49-E3				FRANKFORD ARSENAL JUNE 25 1986	
	7.3	7.2	Q34	Q34	Q34	Q34
	APPROVED: <i>[Signature]</i>					
	SUBMITTED: <i>[Signature]</i>					

ALUMINUM ALLOY, SPEC QQ-A-203

WT 57.5 GRAINS APPROX

* DIMENSIONS GIVEN AT INTERSECTION OF LINES

SCALE-3

Figure C-2

HEAT TREATMENT AND FINAL FINISH

HEAT TO 890°F., HOLD FOR 30 MIN THEN QUENCH IN WATER AT ROOM TEMPERATURE AGE AT 250°F FOR 3 HOURS FOLLOWED BY 325°F FOR 3 HOURS. COOL IN AIR. PRETREATMENT AND FINISH NO. 23-04, SPEC MIL-P-12011 FOR ALL SURFACES, INSIDE AND OUTSIDE.

HEAT NECK TO Ø DEPTH IN WATER AT ROOM TEMPERATURE SECONDS, THEN QUENCH IN SALT BATH AT 700°F FOR 15 SECONDS, THEN CONCENTRATED DISPERSION OF GRAPHITE IN ALCOHOL IN 10 PARTS DENATURED ETHYL ALCOHOL (BY VOLUME).

STAMPING MUST BE LEGIBLE
AND NOT ENCRUSH ON
EITHER THE PRIMER CRIMP
OR ON THE HEAD LEVEL.

AN INCL TAPER NOT TO EXCEED .002 IS ALLOWABLE IN NECK DUE TO VARIABLE EXPANSION OF ALUMINUM.

CASE, CARTRIDGE,
CAL 762MM,
FA T49-E I

NOTICE:- THIS DRAWING SHALL NOT BE USED FOR REPRODUCTION EITHER WHOLLY OR IN PART WITHOUT PERMISSION FROM THE DIRECTOR GENERAL OF ARMS.
EXCEPT WHEN AUTHORIZED IN CONNECTION WITH UNITED STATES GOVERNMENT PROCUREMENT

REVISIONS:

No.	Description	Date

DRAWN BY P.J. CHECKED BY J.A.M. APPROVED BY [Signature] ENGINEER U.S. ARMY CORPS OF ENGINEERS

SCALE: 1" = 1"

* DIMENSIONS GIVEN AT INTERSECTION OF LINES

ALUMINUM ALLOY, SPEC QQ-A-283
WT 69 GRAINS APPROX

FRANKFORD ARSENAL MAR 29, 1956

Figure C-3

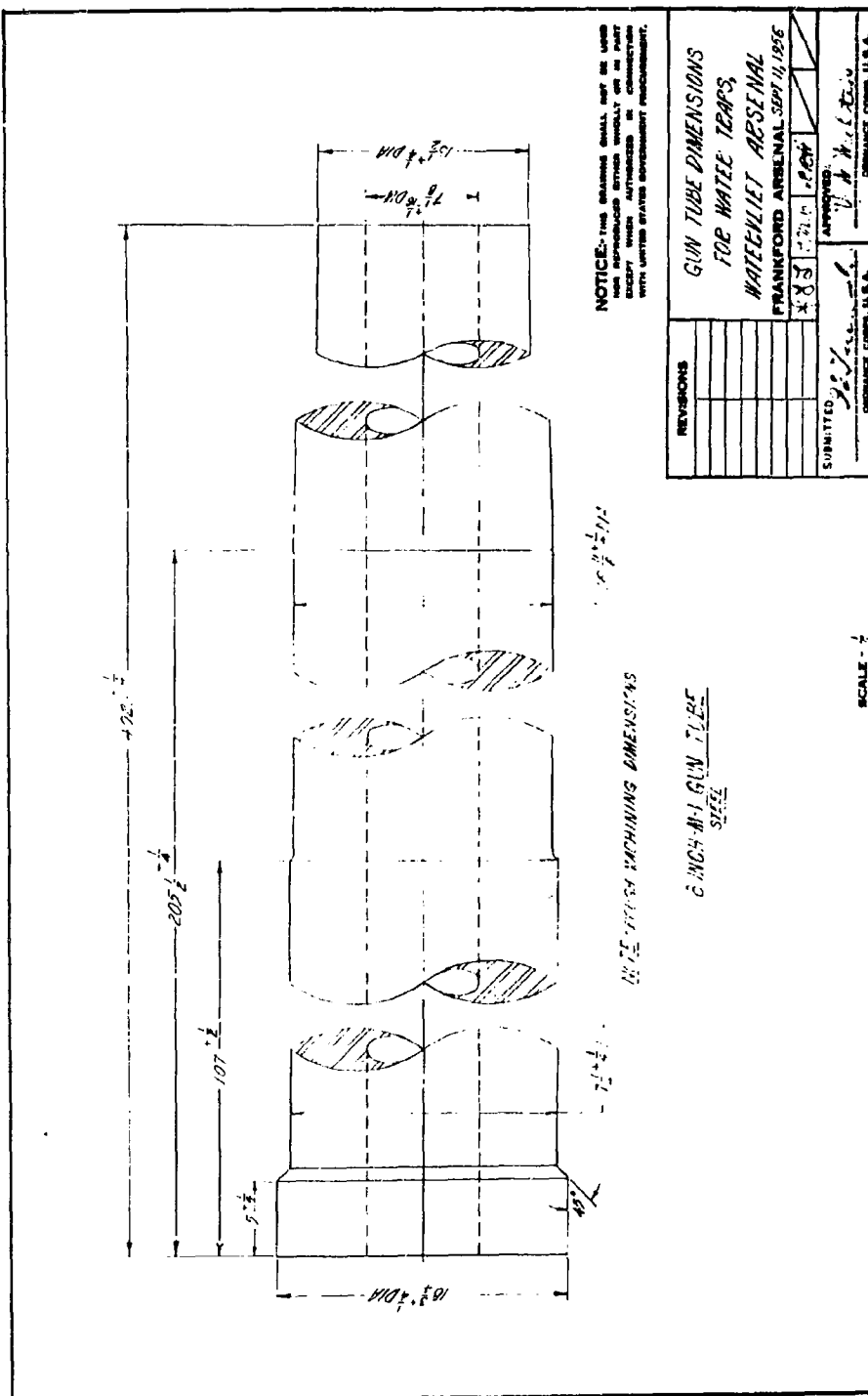


Figure C-5

PLAN OF WORK

NO	OPERATION	DRAWING TOOL	NUMBER BLANK	NO	OPERATION	DRAWING TOOL	NUMBER BLANK
	CASE	FB38671			WASH, RINSE, DRY		
	BLANK & CUP				ANNEAL - 700°F FOR 1/2 HR.		
	BLANK PUNCH	FB39356			WASH, RINSE, DRY & LUBRICATE		
	BLANK PUNCH (ALT.)	FB38703					
	CUP PUNCH	FB38704					
	BLANK & CUP DIE	FB39354					
	BLANK & CUP DIE (ALT.)	FB38705			3RD DRAW		
	SIZE DIE	FB39355			PUNCH	FB38693	
	DIE ANVIL	FB38679			TOP DIE	FSAG804	
	STRIPPER HOLDER	FB38706			BOTTOM DIE	FSAG808	
	STRIPPER SPRING	FSAG3682			STRIPPER (TYPE #19)	FB10858	
	WASH, RINSE, DRY				WASH, RINSE, DRY		
	ANNEAL OF CUP - 700°F FOR 1/2 HR.				ANNEAL - 700°F FOR 1/2 HR.		
	WASH, RINSE, DRY & LUBRICATE				WASH, RINSE, DRY & LUBRICATE		
	1ST DRAW				4TH DRAW		
	PUNCH	FB38707			PUNCH	FB39337	
	TOP DIE	FB38708			TOP DIE	FSAG803	
	BOTTOM DIE	FB38709			BOTTOM DIE	PT192	
	STRIPPER	FB38710			STRIPPER (TYPE #12)	FB10858	
	DATE BUSHING	FB38715			WASH, RINSE, DRY		
	DIE RING	FB38716					
	WASH, RINSE, DRY						
	ANNEAL - 700°F FOR 1/2 HR.						
	WASH, RINSE, DRY & LUBRICATE						
	2ND DRAW						
	PUNCH	PT 113					
	TOP DIE	FSAG803					
	BOTTOM DIE	FSAG803					
	STRIPPER (TYPE #19)	FB10858					

NOTICE: THIS DRAWING SHALL NOT BE USED FOR PRODUCTION OF PARTS WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF THE UNITED STATES GOVERNMENT PROCUREMENT.

REVISIONS	DATE	BY	APPROVED
03-27-58			
CASE CARTRIDGE, 7.62MM			
FA 749-E3 (ALUM)			
PLAN OF WORK			
FRANKFORD ARSENAL SEPT. 25, 1958			
SUBMITTED	DATE	BY	APPROVED
ENG. COMPANY, U.S.A.			

Figure C-6-1

PLAN OF WORK

NO	OPERATION	DRAWING TOOL	NUMBER BLANK	NO	OPERATION	DRAWING TOOL	NUMBER BLANK
	FIRST TRIM				2ND TAPER		
	SPINDLE	FSAG117			SHOULDER DIE	FSAG143	
	SLEEVE	FSAG118			BODY DIE	FSAG144	
	BURRING CUTTER	FSAG119			DIE ANVIL	FSAG145	
	NUT	FSAG120			EJECT STEM	FSAG146	
	CUTTER	PT 126			PUNCH		
	STRIPPER RING	FSAG122					
	SPRING	FSAG123			WASH, RINSE, DRY		
	HEAD HOLDER	FB40694			FINISH TRIM (VERTICAL)		
	PUNCH ANVIL	PT1040			CUTTER HOLDER	PT1010	
	PUNCH	FB40693			RETAINER SEAT	FSAG147	
	DIE	FSAG131			CASE SUPPORT	FSAG148	
	DIE ANVIL	FSAG132			SUPPORT COVER	FSAG149	
	EJECT STEM	FSAG133			CUTTER CLAMP		
	WASH, RINSE, DRY				VENT (PRIMER MACHINE)		
	HEAD TURN				SOLUTION HEAT TREAT		
	FORM TOOL	FB40696			(HEAD STALLED DOWN) 900°F FOR 1/2 HR.		
	FACING TOOL	PT1007					
	COLLET	PT1008					
	SPRING	PT1009					
	WASH, RINSE, DRY						
	ANNEAL - 750°F FOR 2 HRS, COOL AT 50°F PER HR. TO 400°F, COOL AT ROOM TEMP.						
	SPREAD MOUTH						
	PUNCH	FSAG138					
	1ST TAPER						
	SHOULDER DIE	FSAG139					
	BODY J.E	FSAG140					
	DIE ANVIL	FSAG141					
	EJECT STEM	FSAG142					

NOTICE: THIS DRAWING SHALL NOT BE USED FOR THE PRODUCTION OF PARTS WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF THE UNITED STATES GOVERNMENT.

REVISIONS	(CASE CARTRIDGE, 7.62MM) FM 749-E3 (ALUM) PLAN OF WORK FRANKFORD ARSENAL SEPT 26, 1950
SUBMITTED	APPROVED
R. C. Anderson	J. J. White
ENGINEER	ENGINEER

GRAPHIC FORM 100-10-100-100

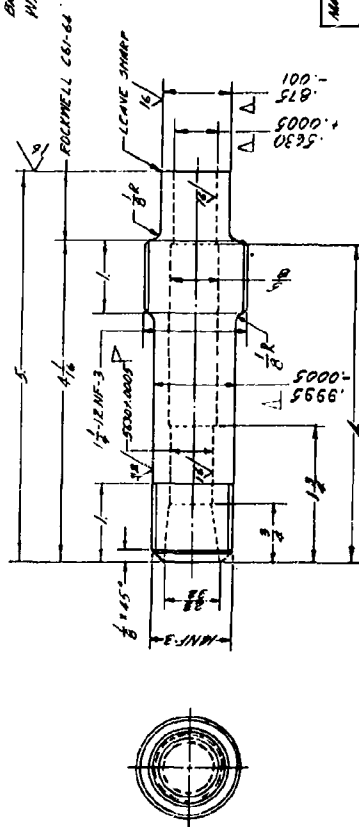
Figure C-6-2

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EXCEPT WHEN AUTHORIZED BY COMSEC
WITH UNITED STATES GOVERNMENT PARTICIPATION.

[illegible]

Figure C-6-3

DIMENSIONS SHALL BE CONCEPTUAL WITHIN .001 TOTAL INDICATOR READING.
BOTH SIZES SHALL BE PARALLEL & SQUARE WITH AXIS WITHIN .001 TOTAL INDICATOR READING. DIMENSIONS UNLESS OTHERWISE INDICATED SHALL BE HELD TO DECIMALS \pm .005 FRACTIONS \pm .001.
FINISH SURFACES UP TO & INCLUDING A SHAFT BE FREE FROM SCRAPES, TOOL MARKS, CHECKS & PARTICULAR MARKS.
BREAK ALL SHARP CORNERS UNLESS OTHERWISE INDICATED.



FINISH 68/EXCEPT AS NOTED

NOTICE: THE FOLLOWING SMALL, MAY BE USED FOR INFORMATION PURPOSES ONLY ON THE FIRST COPY OF THE REPORT. (1) INFORMATION IS CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.

[illegible]

1

Figure C-7

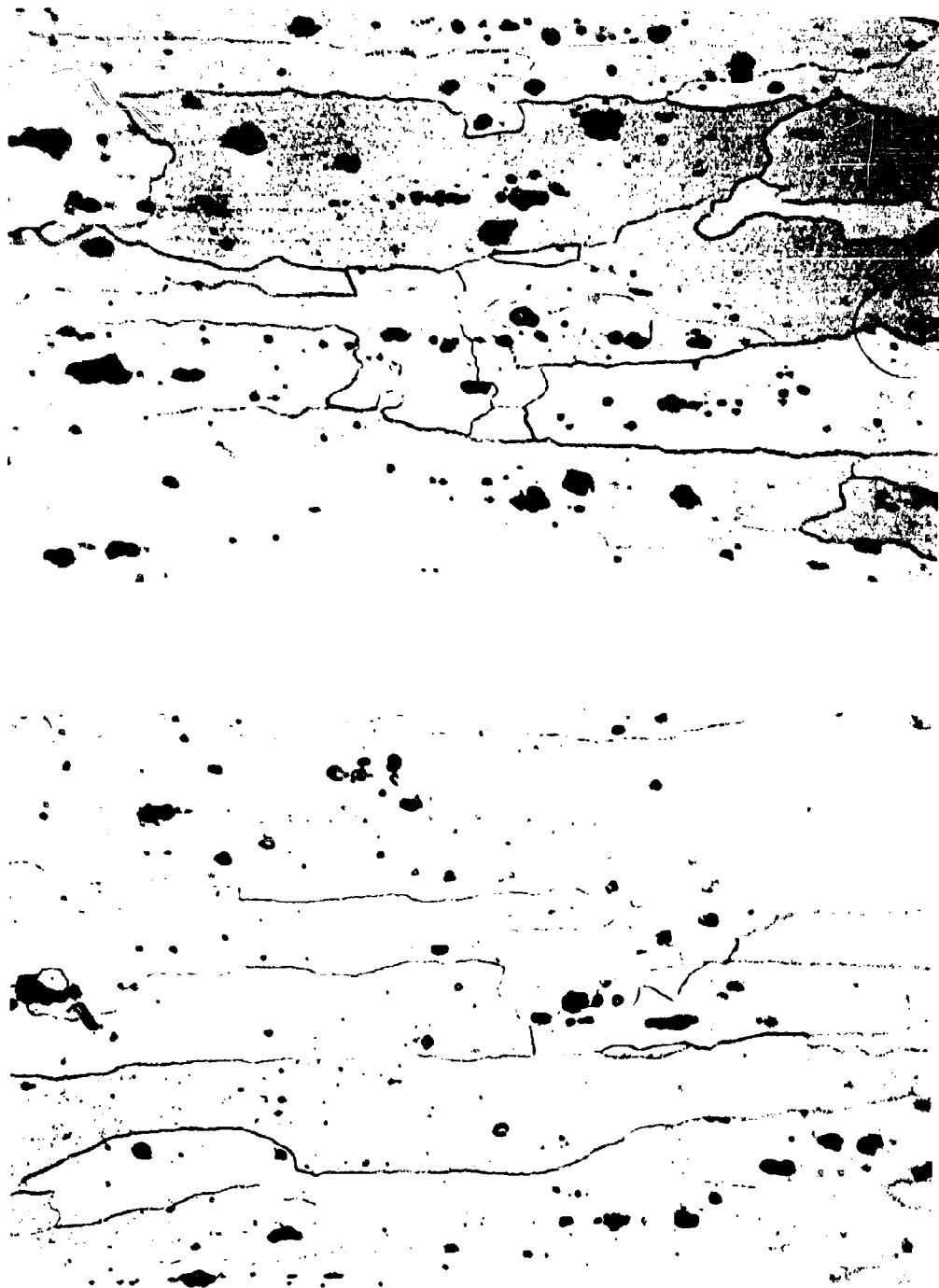
APPENDIX D



860°F - 30 minutes

870°F - 25 minutes

Figures D-1 & D-2. Photomicrographs of Sections of 30 Cal. Aluminum Cases Subjected to Varying Solution Quench Treatments 500X



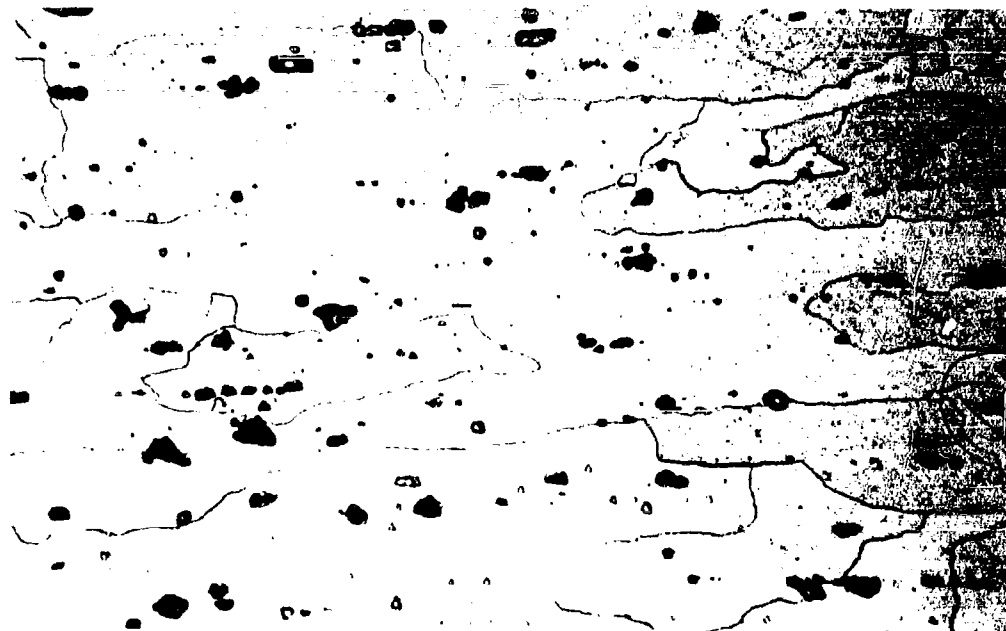
870°F - 30 minutes

870°F - 35 minutes

Figures D-3 & D-4. Photomicrographs of Sections of 30 Cal. Aluminum Cases Subjected to Varying Solution Quench Treatments 500X



870°F - 40 minutes



880°F - 30 minutes

Figures D-5 & D-6. Photomicrographs of Sections of 30 Cal. Aluminum Cases Subjected to Varying Solution Quench Treatments 500X



890°F - 25 minutes



890°F - 30 minutes

Figures D-7 & D-8. Photomicrographs of Sections of 30 Cal. Aluminum Cases Subjected to Varying Solution Quench Treatments 500X



900°F - 30 minutes

Figure D-9. Photomicrographs of Sections of 30 Cal. Aluminum Cases Subjected to Varying Solution Quench Treatments 500X

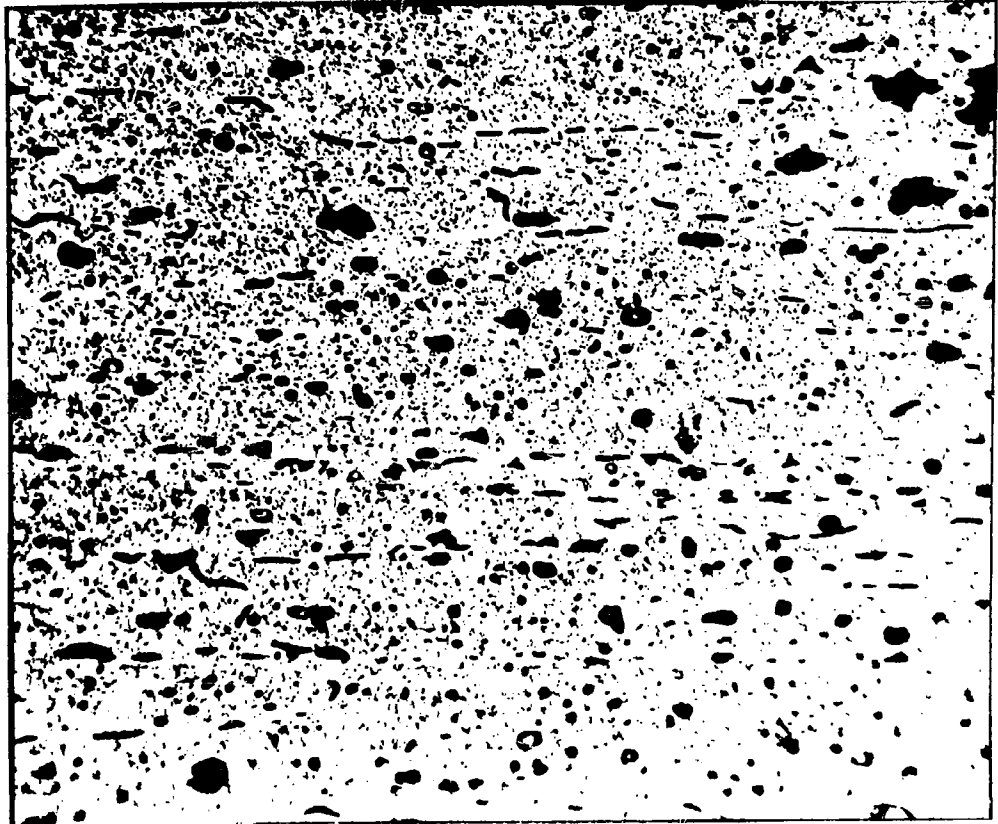


Figure D-10. 7075-0 Material "as received"

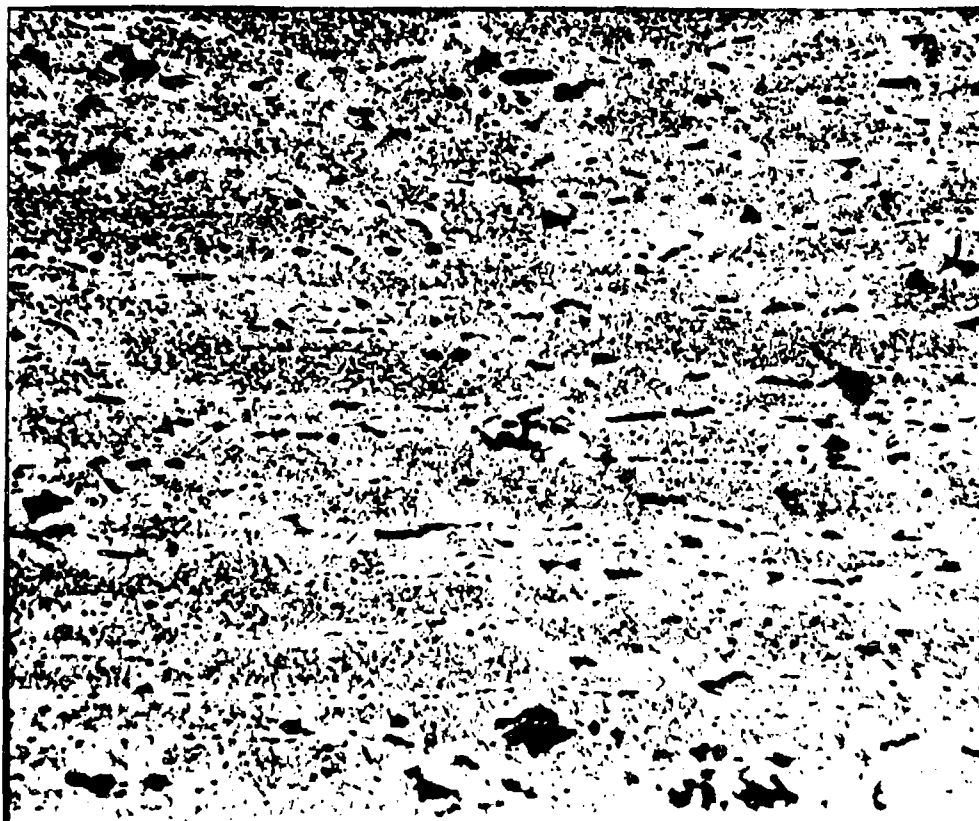


Figure D-11. 7075-T6 Material After Annealing

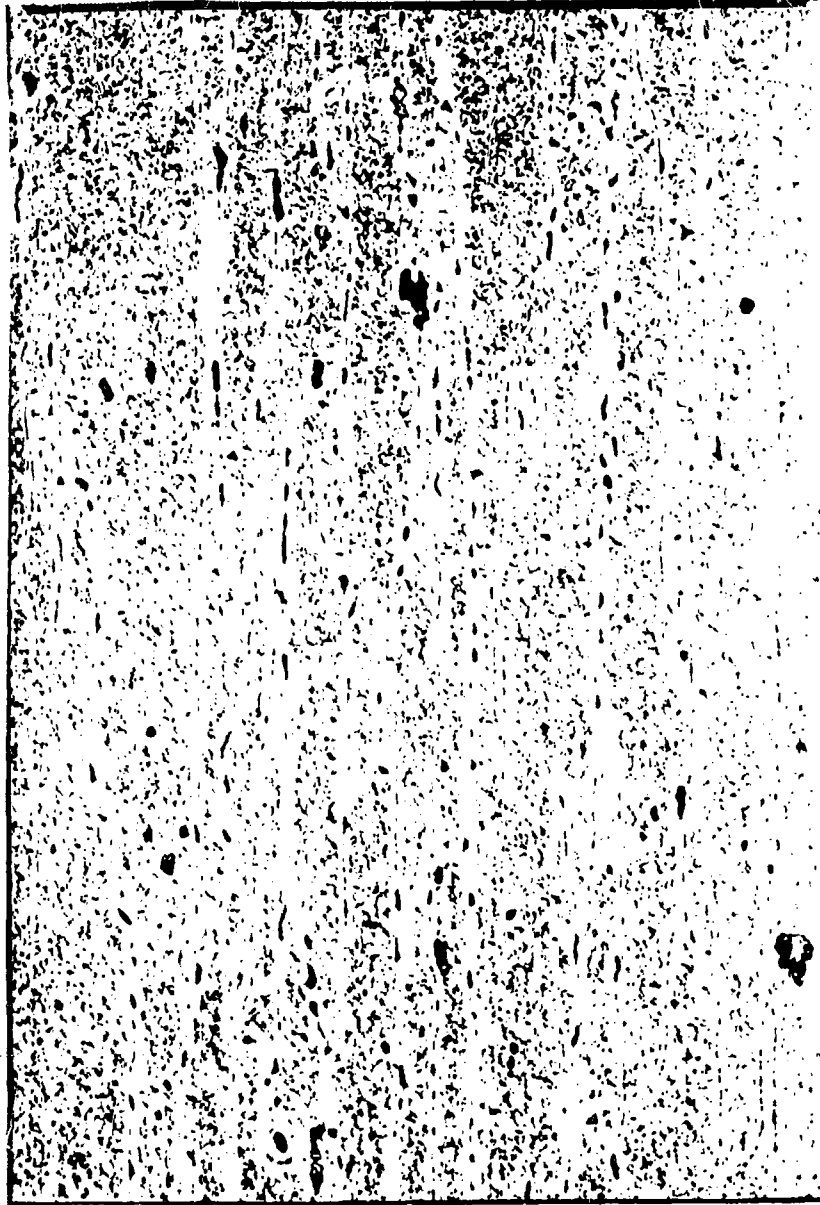


Figure D-12. 7075-0 Material After Solution Quench Treatment and Annealing

APPENDIX E

PROCEDURE FOR ANODIZING ALUMINUM CARTRIDGE CASES

1. Rack cases.
2. Clean in inhibited alkaline cleaner (.5 lbs Oakite #61 per gal water at 180° - 190°F/15').
3. Rinse in cold water.
4. Pickle (1.43 lbs sulfuric acid - 61 Baume - plus .27 lbs chromic acid per gal. water/10').
5. Rinse in cold water.
6. Anodize for 30 min. in a 15 to 18% solution of sulfuric acid (by volume) in water. Bath temperature 70° ± 2°F. Voltage, 18 to 24. Current density, 3 to 5 amps per square foot.
7. Rinse in cold water.
8. Rinse in cold water.
9. Seal for 30 min. in 5% solution of potassium dichromate (by weight) in water at 200 + 205°F.
10. Rinse in hot water (180 - 190°F).
11. Dry in oven.
12. Remove cases from racks.
13. Strip racks (.38 lbs phosphoric acid per gal. water).
14. Rinse racks in cold water.

NOTE: Anodizing operation generates heat. Bath temperature is maintained at 70°F. by a refrigerating unit.

DISTRIBUTION

<p>Chief of Ordnance Department of the Army Washington 25, D. C.</p> <p>1 - Attn: ORDTS</p> <p>1 - Attn: ORDIM</p> <p>2 - Commander Wright Air Development Center Dayton 2, Ohio</p> <p>Commanding General Ordnance Ammunition Command Joliet, Illinois</p> <p>1 - Attn: ORDLY-ARAR</p> <p>2 - Commanding Officer Springfield Armory Springfield 1, Mass.</p> <p>2 - Commanding General Ordnance Weapons Command Rock Island, Illinois</p> <p>1 - Commanding Officer Watertown Arsenal Watertown, New York</p> <p>1 - Commander Air Proving Ground Center Eglin Air Force Base Florida</p> <p>1 - Commanding Officer Picatinny Arsenal Dover, New Jersey</p>	<p>Commanding General Aberdeen Proving Ground Maryland</p> <p>1 - Attn: D & PS</p> <p>1 - Attn: BRL</p> <p>1 - Attn: Tech Info Br</p> <p>1 - Commanding Officer Army Chemical Center Wound Ballistics Lab Edgewood, Maryland</p> <p>1 - Commanding Officer Bureau of Ordnance Dept of the Navy Washington 25, D. C.</p> <p>Commanding Officer Diamond Ord Fuze Lab Washington 25, D. C.</p> <p>1 - Attn: Tech Ref Section</p> <p>Armed Services Technical Information Agency Arlington Hall Station Arlington 12, Virginia</p> <p>10 - Attn: TIPDR</p>
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<p>AD- R-1646 Small Arms Ammunition Division, Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa.</p> <p>DEVELOPMENT OF CASE, CARTRIDGE, ALUMINUM, FAT49E4 by H. Burgess</p> <p>Technical Report R-1646, July 1962, 100 pp including illustrations (OMS 4230.1.8841.20.00.02, 4230.1.8903.20.00.01, DA Project TSI-2, UNCLASSIFIED REPORT</p> <p>This report covers the design, development, fabrication and evaluation of the 7.62mm aluminum cartridge case by the blank, cup and draw process. Initial development utilized regular brass case tooling with minor changes. Modification to the initial cartridge case design eliminated problems encountered during fabrication. Various firing casualties such as primer leaks, blown primers and gas eroded heads were encountered during testing in rifles and machine guns. Changes in heat treatment, the type of propellant and primer used and a closer control of the head area dimensions of the case resulted in the fabrication of a 7.62mm aluminum cartridge</p>	<p>AD- R-1646 Small Arms Ammunition Division, Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa.</p> <p>DEVELOPMENT OF CASE, CARTRIDGE, ALUMINUM, FAT49E4 by H. Burgess</p> <p>Technical Report R-1646, July 1962, 100 pp including illustrations (OMS 4230.1.8841.20.00.02, 4230.1.8903.20.00.01, DA Project TSI-2, UNCLASSIFIED REPORT</p> <p>This report covers the design, development, fabrication and evaluation of the 7.62mm aluminum cartridge case by the blank, cup and draw process. Initial development utilized regular brass case tooling with minor changes. Modification to the initial cartridge case design eliminated problems encountered during fabrication. Various firing casualties such as primer leaks, blown primers and gas eroded heads were encountered during testing in rifles and machine guns. Changes in heat treatment, the type of propellant and primer used and a closer control of the head area dimensions of the case resulted in the fabrication of a 7.62mm aluminum cartridge</p>	<p>UNCLASSIFIED</p> <p>1. Cartridge Case, Aluminum 2. 7.62mm Cartridge Case</p> <p>I. H. Burgess H. OMS 4230.1.8841.20.00.02 4230.1.8903.20.00.01 III. DA Project TSI-2</p> <p>DISTRIBUTION LIMITATIONS: None, obtain copies from ASTIA.</p> <p>UNCLASSIFIED</p>	<p>UNCLASSIFIED</p> <p>1. Cartridge Case, Aluminum 2. 7.62mm Cartridge Case</p> <p>I. H. Burgess H. OMS 4230.1.8841.20.00.02 4230.1.8903.20.00.01 III. DA Project TSI-2</p> <p>DISTRIBUTION LIMITATIONS: None, obtain copies from ASTIA.</p> <p>UNCLASSIFIED</p>
<p>AD- R-1646 Small Arms Ammunition Division, Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa.</p> <p>DEVELOPMENT OF CASE, CARTRIDGE, ALUMINUM, FAT49E4 by H. Burgess</p> <p>Technical Report R-1646, July 1962, 100 pp including illustrations (OMS 4230.1.8841.20.00.02, 4230.1.8903.20.00.01, DA Project TSI-2, UNCLASSIFIED REPORT</p> <p>This report covers the design, development, fabrication and evaluation of the 7.62mm aluminum cartridge case by the blank, cup and draw process. Initial development utilized regular brass case tooling with minor changes. Modification to the initial cartridge case design eliminated problems encountered during fabrication. Various firing casualties such as primer leaks, blown primers and gas eroded heads were encountered during testing in rifles and machine guns. Changes in heat treatment, the type of propellant and primer used and a closer control of the head area dimensions of the case resulted in the fabrication of a 7.62mm aluminum cartridge</p>	<p>AD- R-1646 Small Arms Ammunition Division, Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa.</p> <p>DEVELOPMENT OF CASE, CARTRIDGE, ALUMINUM, FAT49E4 by H. Burgess</p> <p>Technical Report R-1646, July 1962, 100 pp including illustrations (OMS 4230.1.8841.20.00.02, 4230.1.8903.20.00.01, DA Project TSI-2, UNCLASSIFIED REPORT</p> <p>This report covers the design, development, fabrication and evaluation of the 7.62mm aluminum cartridge case by the blank, cup and draw process. Initial development utilized regular brass case tooling with minor changes. Modification to the initial cartridge case design eliminated problems encountered during fabrication. Various firing casualties such as primer leaks, blown primers and gas eroded heads were encountered during testing in rifles and machine guns. Changes in heat treatment, the type of propellant and primer used and a closer control of the head area dimensions of the case resulted in the fabrication of a 7.62mm aluminum cartridge</p>	<p>UNCLASSIFIED</p> <p>1. Cartridge Case, Aluminum 2. 7.62mm Cartridge Case</p> <p>I. H. Burgess H. OMS 4230.1.8841.20.00.02 4230.1.8903.20.00.01 III. DA Project TSI-2</p> <p>DISTRIBUTION LIMITATIONS: None, obtain copies from ASTIA.</p> <p>UNCLASSIFIED</p>	<p>UNCLASSIFIED</p> <p>1. Cartridge Case, Aluminum 2. 7.62mm Cartridge Case</p> <p>I. H. Burgess H. OMS 4230.1.8841.20.00.02 4230.1.8903.20.00.01 III. DA Project TSI-2</p> <p>DISTRIBUTION LIMITATIONS: None, obtain copies from ASTIA.</p> <p>UNCLASSIFIED</p>

AD- R-1645 (Cont'd)	ACCESSION NO. 2	UNCLASSIFIED	AD- R-1646 (Cont'd)	ACCESSION NO.	UNCLASSIFIED
case acceptable at this stage of its development since it is almost completely free of defects. The case thus developed is identified as Case, Cartridge, 7.62mm, FAT49E4.			case acceptable at this stage of its development since it is almost completely free of defects. The case thus developed is identified as Case, Cartridge, 7.62mm, FAT49E4.		
		UNCLASSIFIED			UNCLASSIFIED
AD- R-1646 (Cont'd)	ACCESSION NO.	UNCLASSIFIED	AD- R-164b (Cont'd)	ACCESSION NO.	UNCLASSIFIED
case acceptable at this stage of its development since it is almost completely free of defects. The case thus developed is identified as Case, Cartridge, 7.62mm, FAT49E4.			case acceptable at this stage of its development since it is almost completely free of defects. The case thus developed is identified as Case, Cartridge, 7.62mm, FAT49E4.		
		UNCLASSIFIED			UNCLASSIFIED

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